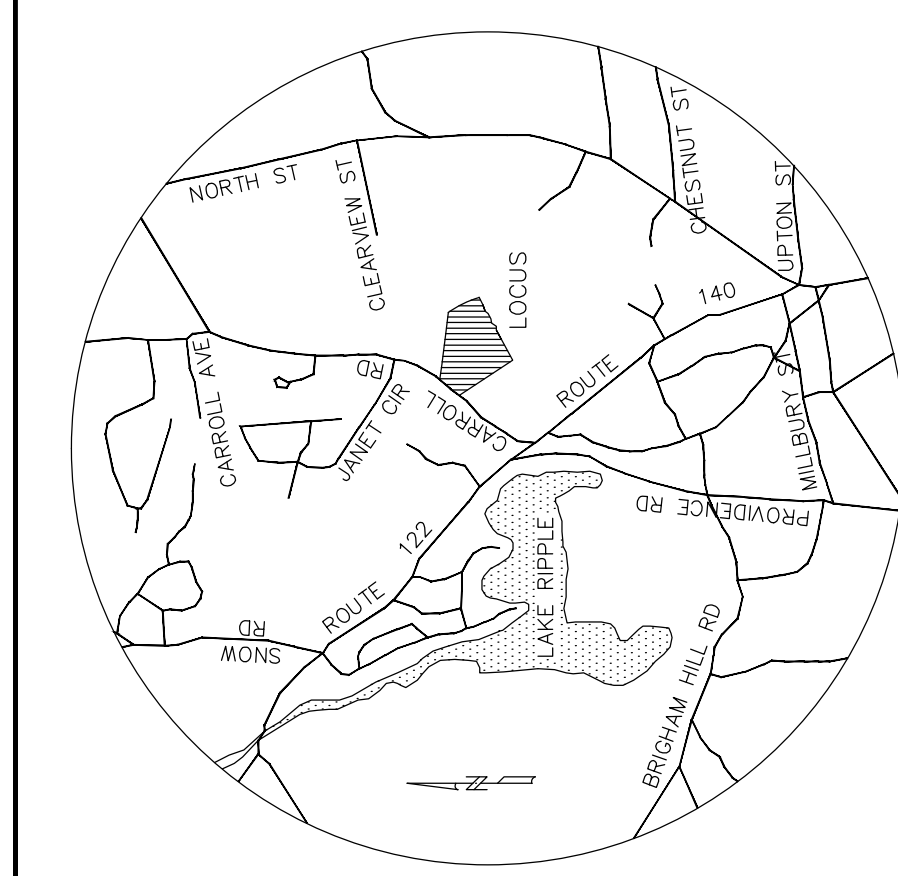
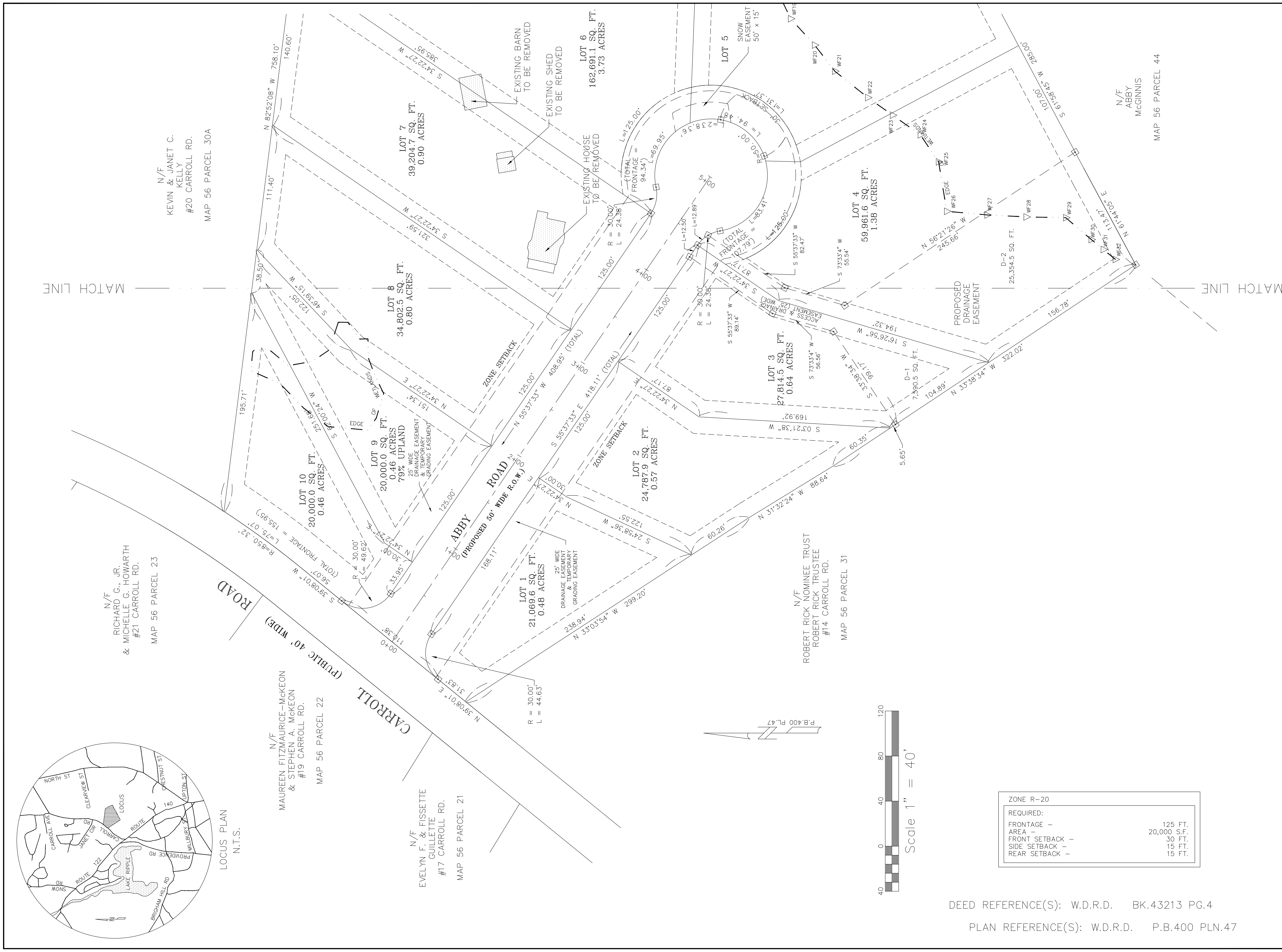


FINAL 08-03-2020



ZONE R-20	
REQUIRED:	
FRONTAGE -	125 FT.
AREA -	20,000 S.F.
FRONT SETBACK -	30 FT.
SIDE SETBACK -	15 FT.
REAR SETBACK -	15 FT.

- NOTES:
1. THIS PLAN IS PREPARED IN ACCORDANCE WITH A MAJOR RESIDENTIAL SPECIAL PERMIT GRANTED BY THE GRAFTON PLANNING BOARD ON 1/25/11, AND RECORDED IN THE WORCESTER DISTRICT REGISTRY OF DEEDS IN BOOK 47336, PAGE 90.
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 3. SEE DEFINITIVE SUBDIVISION SHEET OF FOR PLANNING BOARD CONDITIONS OF APPROVAL.

CERTIFICATE OF NO APPEAL
DECISION OF THE GRAFTON PLANNING BOARD APPROVING THIS PLAN RECORDED IN THE OFFICE OF THE TOWN CLERK

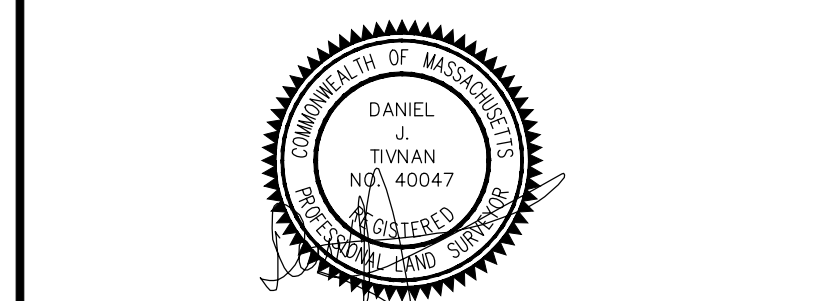
NO NOTICE OF APPEAL THEREFROM WAS RECEIVED BY THE TOWN CLERK DURING THE 20 DAYS FOLLOWING.

TOWN CLERK _____ DATE _____

DEEDS OF EASEMENTS TO BE RECORDED HEREWITH.

GRAFTON PLANNING BOARD
APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED

DATE: _____
BEING A MAJORITY OF THE BOARD



I CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN CONFORMITY WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.



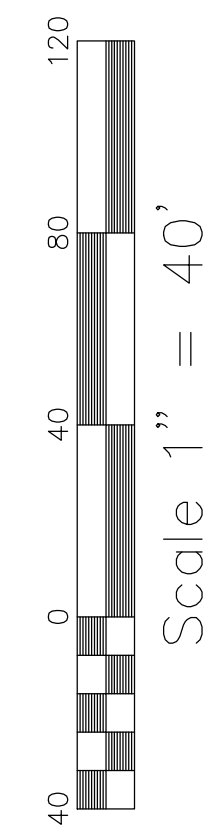
hs&t group, inc.
PROFESSIONAL CIVIL ENGINEERS & LAND SURVEYORS
75 HAMMOND STREET - 2ND FLOOR
WORCESTER, MASSACHUSETTS 01610-1723
PHONE: 508-757-4944 EMAIL: INFO@HSTGROUP.NET
FAX: 508-752-8895 WWW.HSTGROUP.NET

DEFINITIVE SUBDIVISION
ABBY WOODS
18 CARROLL ROAD

APPLICANT/OWNER: CENTRAL MASSACHUSETTS HOME BUILDERS LLC
125 OLEAN STREET
WORCESTER, MA 01602

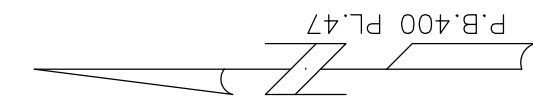
FIELD:	DJT	DATE:	02/11/2020	FLD BOOK:	307B
COMP'D:	DJT	SCALE:	1"=40'	FLD PAGE:	48
CAD:	LLW	ZONE:	R-20	CARRWK2-DEF-REV.DWG	
CHECKED:	DJT, HH	JOB#:	2650	DWG#:	4391

DEED REFERENCE(S): W.D.R.D. BK.43213 PG.4
PLAN REFERENCE(S): W.D.R.D. P.B.400 PLN.47



MATCH LINE

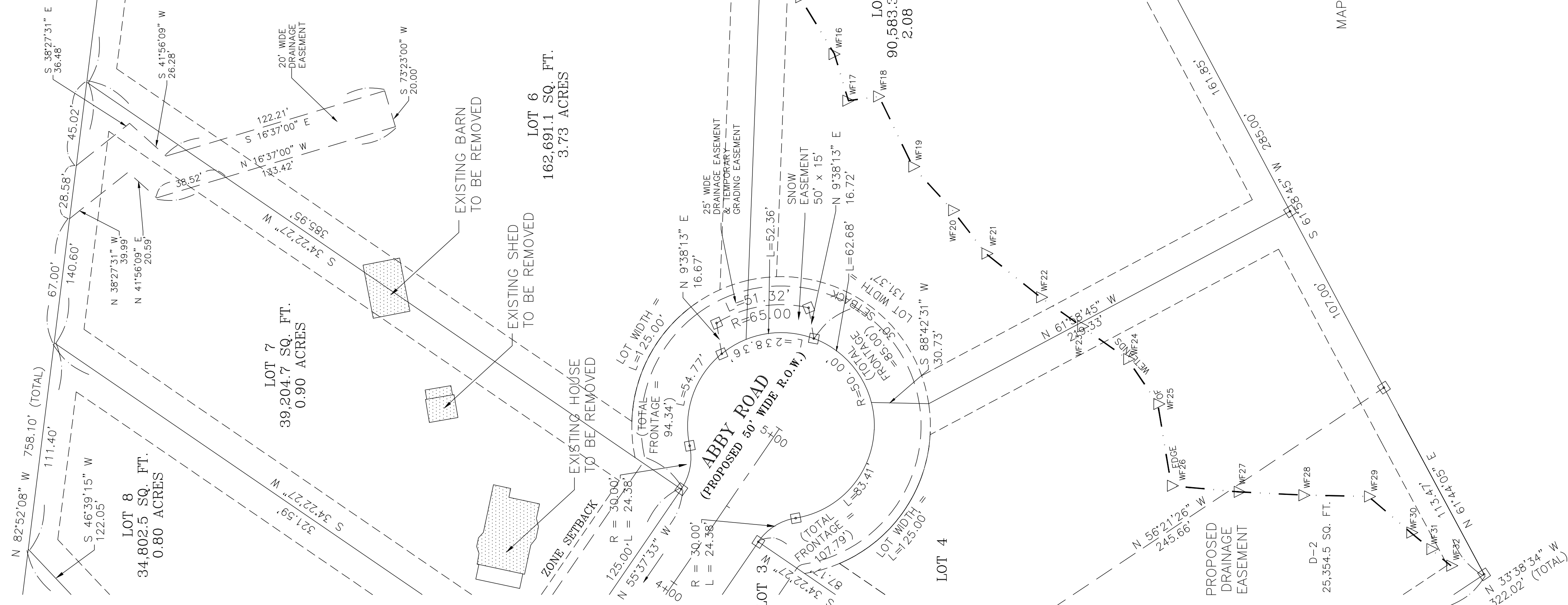
N/F
KEVIN & JANET C.
KELLY
#20 CARROLL RD.
MAP 56 PARCEL 30A



SEE DETAIL
FOR PARCEL "B"

N/F
OLIVER & DOROTHY M.
CHRISTENSEN
MAP 47 PARCEL 48

GRAFTON & UPTON RAILROAD



ZONE R-20	
REQUIRED:	
FRONTAGE -	125 FT.
AREA -	20,000 S.F.
FRONT SETBACK -	30 FT.
SIDE SETBACK -	15 FT.
REAR SETBACK -	15 FT.

NOT A
BUILDABLE LOT

N/F
OLIVER & DOROTHY M.
CHRISTENSEN
MAP 47 PARCEL 48

N/F
ABBY
McGINNIS
MAP 56 PARCEL 44

DETAIL
"PARCEL B"

MATCH LINE

NOTES:

1. THIS PLAN IS PREPARED IN ACCORDANCE WITH A MAJOR RESIDENTIAL SPECIAL PERMIT GRANTED BY THE GRAFTON PLANNING BOARD ON 1/25/11, AND RECORDED IN THE WORCESTER DISTRICT REGISTRY OF DEEDS IN BOOK 47336, PAGE 90.
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APPROVING THIS PLAN RECORDED IN THE OFFICE
OF THE TOWN CLERK

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DAYS FOLLOWING.

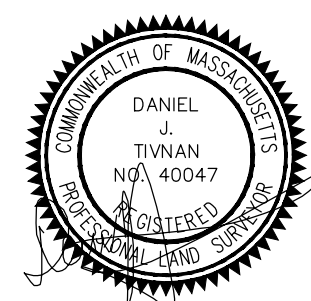
TOWN CLERK _____ DATE _____

DEEDS OF EASEMENTS TO BE RECORDED
HEREWITH.

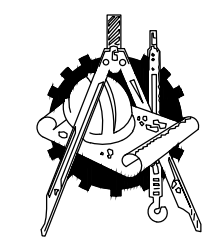
G R A F T O N
PLANNING BOARD

APPROVAL UNDER THE SUBDIVISION
CONTROL LAW IS REQUIRED

DATE: _____
BEING A MAJORITY OF THE BOARD



I CERTIFY THAT THIS PLAN HAS BEEN
PREPARED IN CONFORMITY WITH THE RULES
AND REGULATIONS OF THE REGISTERS OF DEEDS
OF THE COMMONWEALTH OF MASSACHUSETTS.



hs&t group, inc.
PROFESSIONAL CIVIL ENGINEERS & LAND SURVEYORS
75 HAMMOND STREET - 2ND FLOOR
WORCESTER, MASSACHUSETTS 01610-1723
PHONE: 508-757-4944 EMAIL: INFO@HSTGROUP.NET
FAX: 508-752-8895 WWW.HSTGROUP.NET

DEFINITIVE SUBDIVISION
ABBY WOODS
18 CARROLL ROAD

APPLICANT/OWNER: CENTRAL MASSACHUSETTS HOME BUILDERS LLC
125 OLEAN STREET
WORCESTER, MA 01602

FIELD: DJT DATE: 02/11/2020 FLD BOOK: 307B

COMP'D: DJT SCALE: 1"=40' FLD PAGE: 48

CAD: LLW ZONE: R-20 CARRWK2-DEF-REV.DWG

CHECKED: DJT, HH JOB#: 2650 DWG#: 4391

LOT LAYOUT PLAN

SHEET

3 OF 15

SHEET INDEX

TITLE	SHEET NUMBER
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LOT LAYOUT (1 OF 2)	2
LOT LAYOUT (2 OF 2)	3
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PLAN/PROFILE	8
DETAILS	9-11
SUPPLEMENTAL INFORMATION	12
LANDSCAPING/TREE REMOVAL PLAN	13
PHASING PLAN	14-15

M.H.	●	EXISTING MANHOLE
W	—	WETLANDS
U.P.	○	UTILITY POLE
G.G.	⋈	GAS GATE
C.B.	□	EXISTING CATCH BASIN
C.B.	■	PROPOSED CATCH BASIN
	⋈	FIRE HYDRANT
WFA1	▽	WETLAND FLAG LOCATION
W	—	WATER LINE
GAS	—	GAS LINE
500	---	EXISTING CONTOUR
500	---	PROPOSED CONTOUR
	~~~~~	PROPOSED SWALE

ZONE R-20	
REQUIRED:	
FRONTAGE -	125 FT.
AREA -	20,000 S.F.
FRONT SETBACK -	30 FT.
SIDE SETBACK -	15 FT.
REAR SETBACK -	15 FT.

H.S.&T. GROUP, INC ON 04/28/2020  
PERFORMED AN ACCURATE INSTRUMENT  
SURVEY TO LOCATE WETLAND FLAGS  
PROVIDED BY ROBERT G. MURPHY &  
ASSOCIATES, ENVIRONMENTAL  
CONSULTANTS.

I, ROBERT G. MURPHY OF ROBERT G.  
MURPHY AND ASSOCIATES, INC CERTIFY  
THAT THE WETLAND BOUNDARIES  
DEPICTED ON THIS EXISTING CONDITIONS  
PLAN ARE SUBSTANTIALLY CORRECT  
BASED ON THE WORK CONDUCTED AT  
THE SITE.

DATE OF DELINEATION 9-6-2019

SIGNATURE *Robert G. Murphy*

DATE OF SIGNATURE 7-14-2020

- NOTES:
1. THIS PLAN IS PREPARED IN ACCORDANCE WITH A MAJOR RESIDENTIAL SPECIAL PERMIT GRANTED BY THE GRAFTON PLANNING BOARD ON 1/25/11, AND RECORDED IN THE WORCESTER DISTRICT REGISTRY OF DEEDS IN BOOK 47336, PAGE 90.
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OF THE TOWN CLERK

NO NOTICE OF APPEAL THEREFROM WAS  
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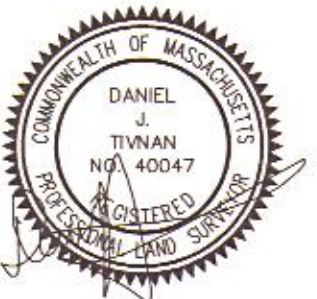
TOWN CLERK DATE

DEEDS OF EASEMENTS TO BE RECORDED  
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GRAFTON  
PLANNING BOARD

APPROVAL UNDER THE SUBDIVISION  
CONTROL LAW IS REQUIRED

DATE:  
BEING A MAJORITY OF THE BOARD



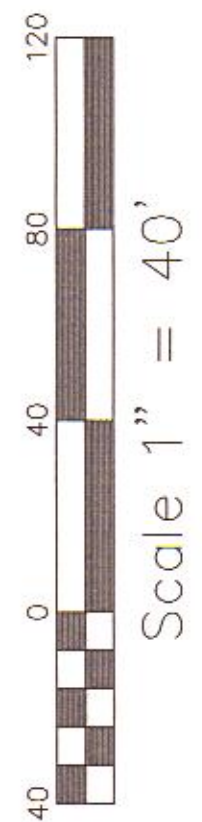
hs&t group, inc.  
PROFESSIONAL CIVIL ENGINEERS & LAND SURVEYORS  
75 HAMMOND STREET - 2ND FLOOR  
WORCESTER, MASSACHUSETTS 01610-1123  
PHONE: 508-757-4944 EMAIL: INFO@HSTGROUP.NET  
FAX: 508-752-8895 WWW.HSTGROUP.NET

DEFINITIVE SUBDIVISION  
ABBY WOODS  
18 CARROLL ROAD  
APPLICANT/OWNER: CENTRAL MASSACHUSETTS HOME BUILDERS LLC  
125 OLEAN STREET  
WORCESTER, MA 01602

FIELD:	DJT	DATE:	02/11/2020	FLD BOOK:	307B
COMP'D:	DJT	SCALE:	1"=40'	FLD PAGE:	48
CAD:	LLW	ZONE:	R-20	CARRWK2-DEF-REV.DWG	
CHECKED:	DJT, HH	JOB#:	2650	DWG#:	4391

EXISTING CONDITIONS

SHEET 5 OF 15

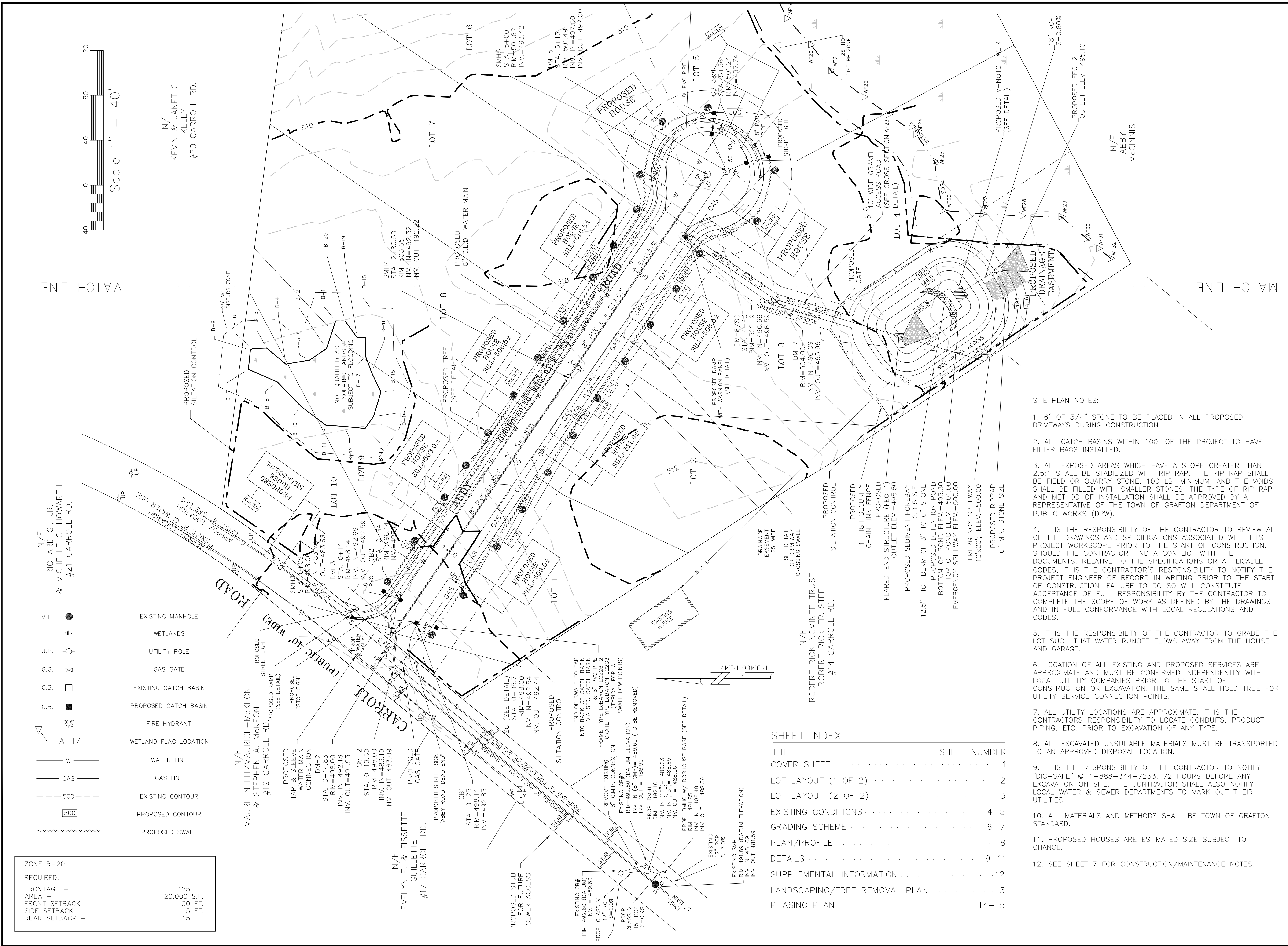


N/F  
KEVIN & JANET C.  
KELLY

MATCH LINE

MATCH LINE





NOTES:

- THIS PLAN IS PREPARED IN ACCORDANCE WITH A MAJOR RESIDENTIAL SPECIAL PERMIT GRANTED BY THE GRAFTON PLANNING BOARD ON 1/25/11, AND RECORDED IN THE WORCESTER DISTRICT REGISTRY OF DEEDS IN BOOK 47336, PAGE 90.
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DEEDS OF EASEMENTS TO BE RECORDED HEREWITH.


**GRAFTON**

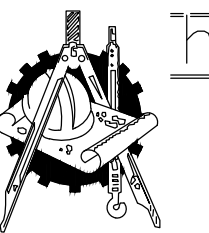
**PLANNING BOARD**

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED

DATE: _____

BEING A MAJORITY OF THE BOARD





**hs&t group, inc.**

PROFESSIONAL CIVIL ENGINEERS & LAND SURVEYORS  
75 HAMMOND STREET - 2ND FLOOR  
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FAX: 508-752-8895 WWW.HSTGROUP.NET

**DEFINITIVE SUBDIVISION**

**ABBY WOODS**

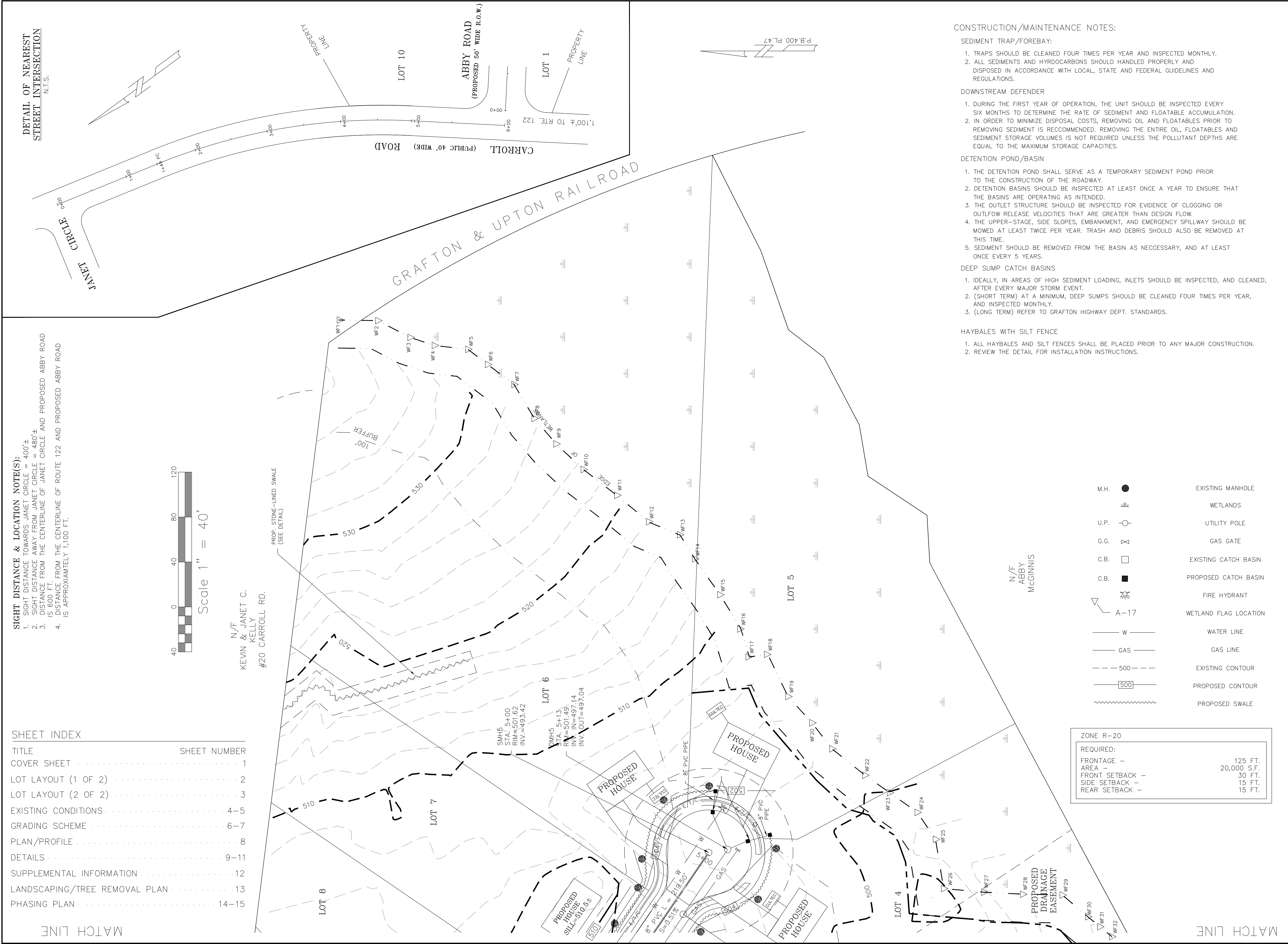
**18 CARROLL ROAD**

APPLICANT/OWNER: CENTRAL MASSACHUSETTS HOME BUILDERS LLC  
125 OLEAN STREET  
WORCESTER, MA 01602

FIELD:	DJT	DATE:	02/11/2020	FLD BOOK:	307B
COMP'D:	DJT	SCALE:	1"=40'	FLD PAGE:	48
CAD:	LLW	ZONE:	R-20	CARRWK2-DEF-REV.DWG	
CHECKED:	DJT, HH	JOB#:	2650	DWG#:	4391

**GRADING SCHEME**

SHEET **6** OF **15**



NOTES:

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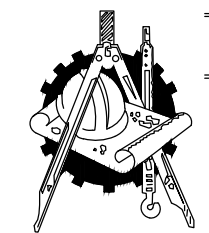
**GRAFTON PLANNING BOARD**

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED

DATE: _____

BEING A MAJORITY OF THE BOARD



 **hs&t group, inc.**

PROFESSIONAL CIVIL ENGINEERS & LAND SURVEYORS  
75 HAMMOND STREET - 2ND FLOOR  
WORCESTER, MASSACHUSETTS 01610-1723  
PHONE: 508-757-4944 EMAIL: INFO@HSTGROUP.NET  
FAX: 508-752-8895 WWW.HSTGROUP.NET

**DEFINITIVE SUBDIVISION**  
**ABBY WOODS**  
**IS CARROLL ROAD**

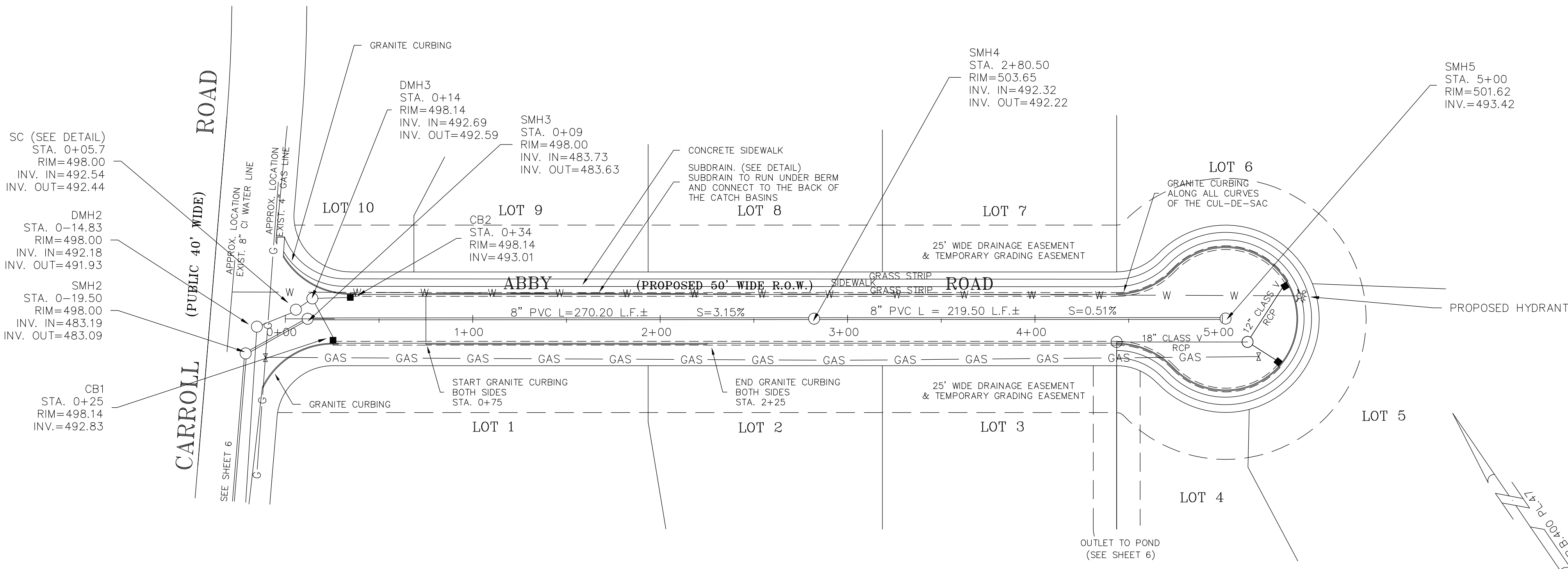
APPLICANT/OWNER: CENTRAL MASSACHUSETTS HOME BUILDERS LLC  
125 OLEAN STREET  
WORCESTER, MA 01602

FIELD:	DJT	DATE:	02/11/2020	FLD BOOK:	307B
COMP'D:	DJT	SCALE:	1"=40'	FLD PAGE:	48
CAD:	LLW	ZONE:	R-20	CARRWK2-DEF-REV.DWG	
CHECKED:	DJT, HH	JOB#:	2650	DWG#:	4391

**GRADING SCHEME**

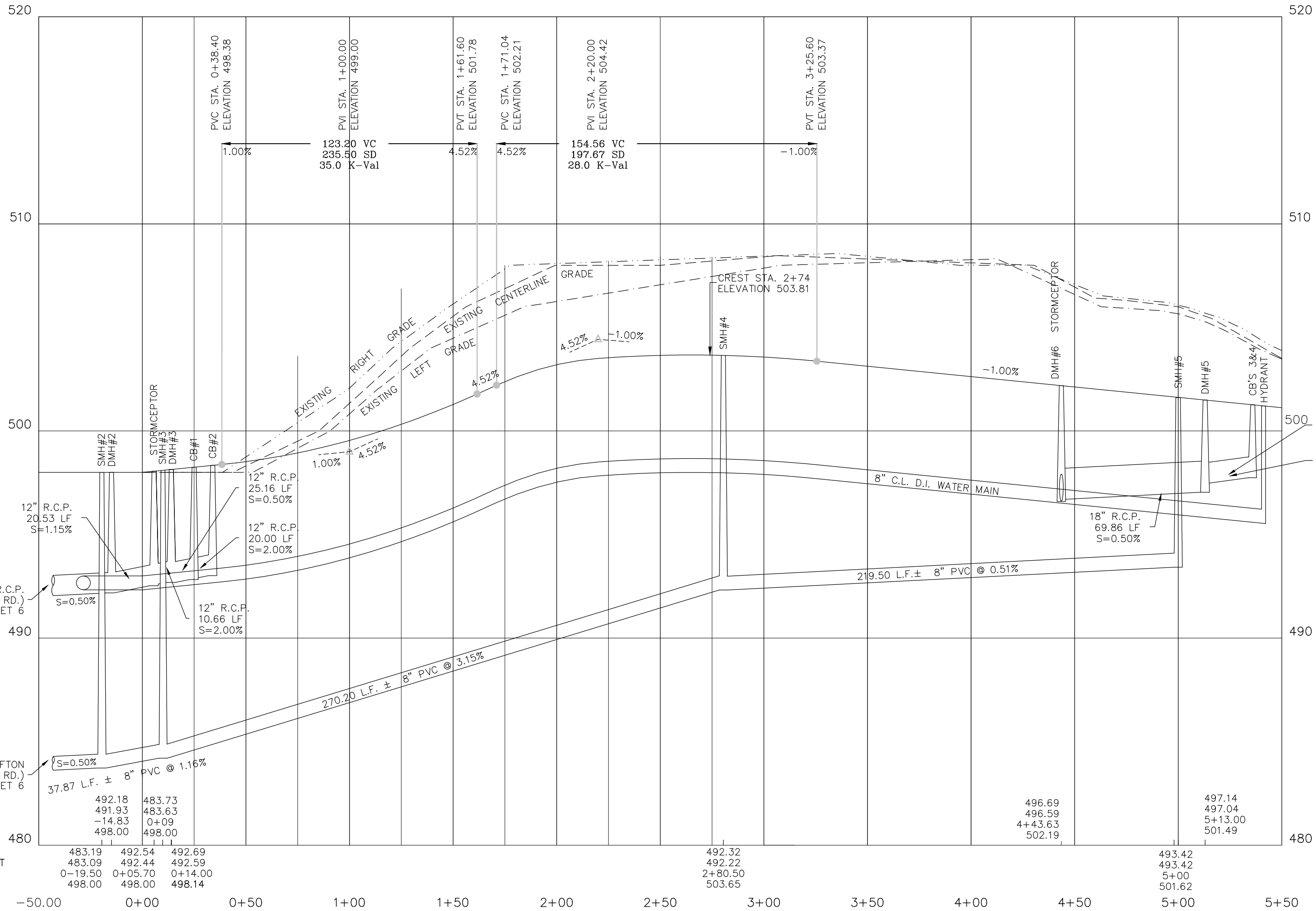
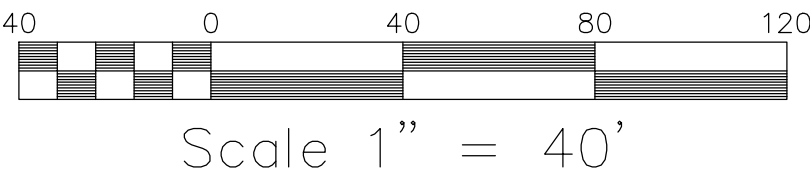
SHEET **7** OF **15**





SHEET INDEX

TITLE	SHEET NUMBER
COVER SHEET	1
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LOT LAYOUT (2 OF 2)	3
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PHASING PLAN	14-15



SLOPE IN LEVELING ZONE:

THE ELEVATION CHANGE BETWEEN STATION 0+99 AND 1+00 IS 0.027. THEREFORE THE PERCENT SLOPE FOR THE LAST FOOT OF THE LEVELING ZONE IS 2.7%. THE MAXIMUM ALLOWABLE SLOPE IS 3%.

NOTES:

1. A DRAINAGE LAYER SHALL BE INSTALLED UNDER THE GRAVEL SUB-BASE AND CONSIST OF A 6" LAYER OF CRUSHED STONE, 3/4" GRADATION. THE LAYER WILL EXTEND FROM ONE EDGE OF PAVEMENT TO THE OTHER AND TERMINATE AT A SUBDRAIN. A SYNTHETIC, NON-WOVEN GEOTEXTILE FABRIC WITH GEOTEXTILE OPENING SIZE OF 0.21mm SHALL BE PLACED ABOVE AND BELOW THE DRAINAGE LAYER.

2. GRAVEL SUB-BASE: STONES NO GREATER THAN 3" SHALL BE SPREAD ON THE SURFACE OF THE SUB-GRADE TO A MINIMUM DEPTH OF 12" IN CONFORMITY WITH THE REQUIREMENTS OF SECTION M. 1.03.0 TYPE b OF THE STANDARD SPECIFICATIONS FOR FURNISHING GRAVEL BORROW. THIS LAYER SHALL BE ROLLED WITH NOT LESS THAN A TEN TON ROLLER, AND COMPACTED TRUE TO LINE AND GRADE, TO 95% OF MAXIMUM DENSITY. ANY DEPRESSIONS THAT APPEAR DURING AND AFTER ROLLING SHALL BE FILLED WITH ADDITIONAL GRAVEL AND RE-ROLLED UNTIL THE SURFACE IS TRUE. AT THE TIME OF PAVING, GRAVEL SHALL BE AT OPTIMUM MOISTURE CONTENT, AND SHALL BE AT LEAST 95% OF MAXIMUM DRY DENSITY. THE GRAVEL SUB-BASE SURFACE SHALL BE TRANSVERSELY SLOPED TO PRODUCE A CROWN OF 1/4" PER FOOT. AT THE COMPLETION OF THE CROWN SLOPE ON THE SUB-BASE SURFACE, ALL PERMANENT MONUMENTS ARE TO BE STAKED AND THEN INSTALLED.

NOTES:

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TOWN CLERK DATE

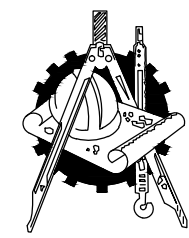
DEEDS OF EASEMENTS TO BE RECORDED HEREWITH.

GRAFTON PLANNING BOARD

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED

_____  
_____  
_____  
_____

DATE:  
BEING A MAJORITY OF THE BOARD



PROFESSIONAL CIVIL ENGINEERS & LAND SURVEYORS  
75 HAMMOND STREET - 2ND FLOOR  
WORCESTER, MASSACHUSETTS 01610-1723  
PHONE: 508-757-4944 EMAIL: INFO@HSTGROUP.NET  
FAX: 508-752-8895 WWW.HSTGROUP.NET

DEFINITIVE SUBDIVISION  
ABBY WOODS  
18 CARROLL ROAD

APPLICANT/OWNER: CENTRAL MASSACHUSETTS HOME BUILDERS LLC  
125 OLEAN STREET  
WORCESTER, MA 01602

FIELD: DJT DATE: 02/11/2020 FLD BOOK: 307B

COMP'D: DJT SCALE: AS SHOWN FLD PAGE: 48

CAD: LLW ZONE: R-20 CARRWK2-DEF-REV.DWG

CHECKED: DJT, HH JOB#: 2650 DWG#: 4391

PLAN / PROFILE

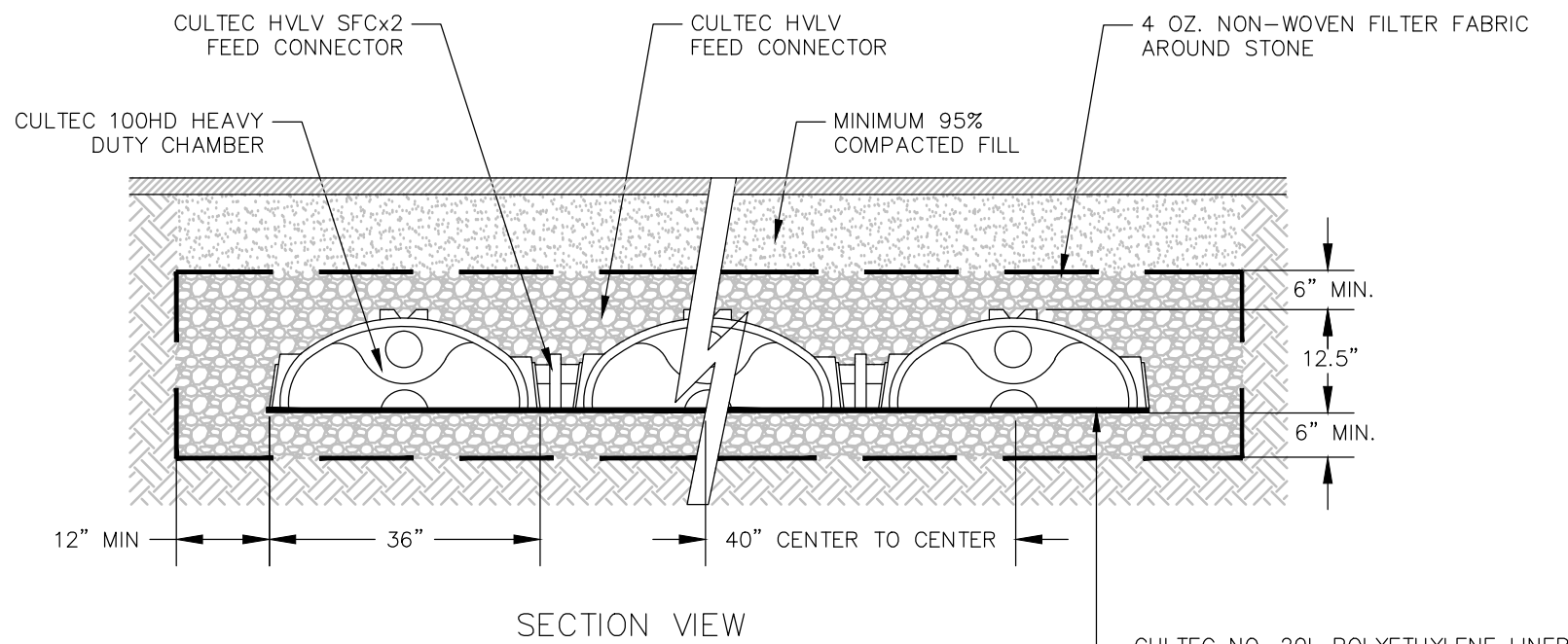
SHEET

8 OF 15



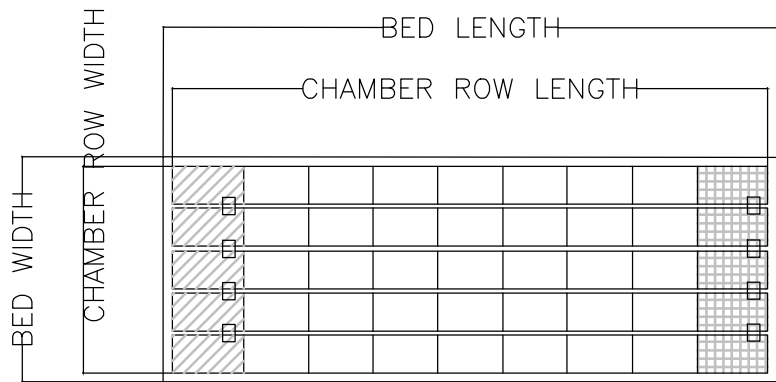
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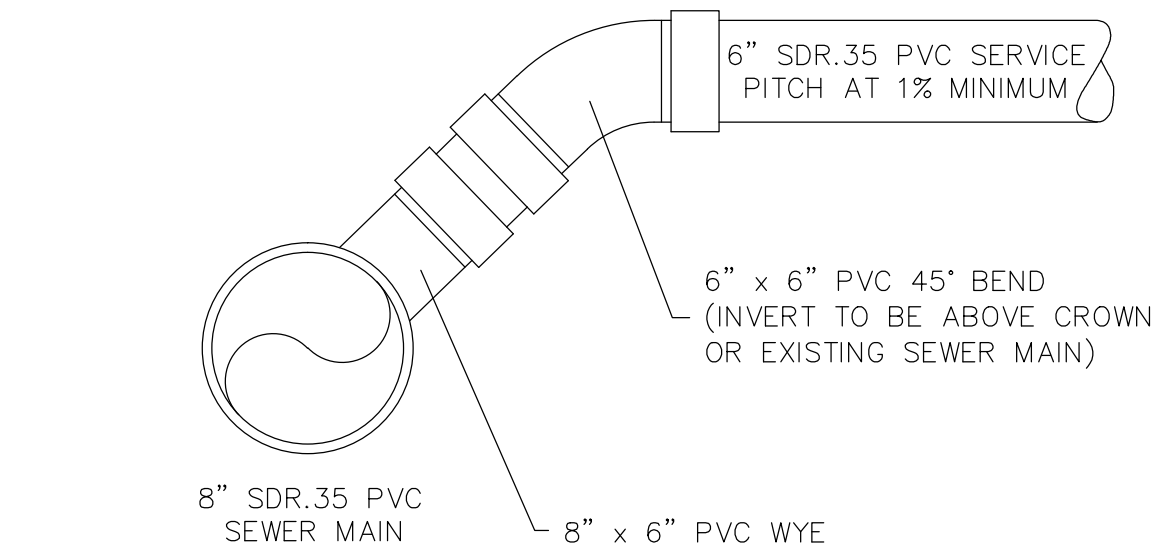
- NOTES:
- 100HD UNIT IS MANUFACTURED BY CULTEC, INC. OF BROOKFIELD, CT.
  - REFER TO CULTEC, INC.'S CURRENT RECOMMENDED INSTALLATION GUIDELINES.
  - THE CHAMBER HAS BEEN DESIGNED TO WITHSTAND TRAFFIC LOADS WHEN INSTALLED ACCORDING TO CULTEC'S RECOMMENDED INSTALLATION INSTRUCTIONS.

CULTEC CONTRACTOR 100 HD DETAIL  
NTS



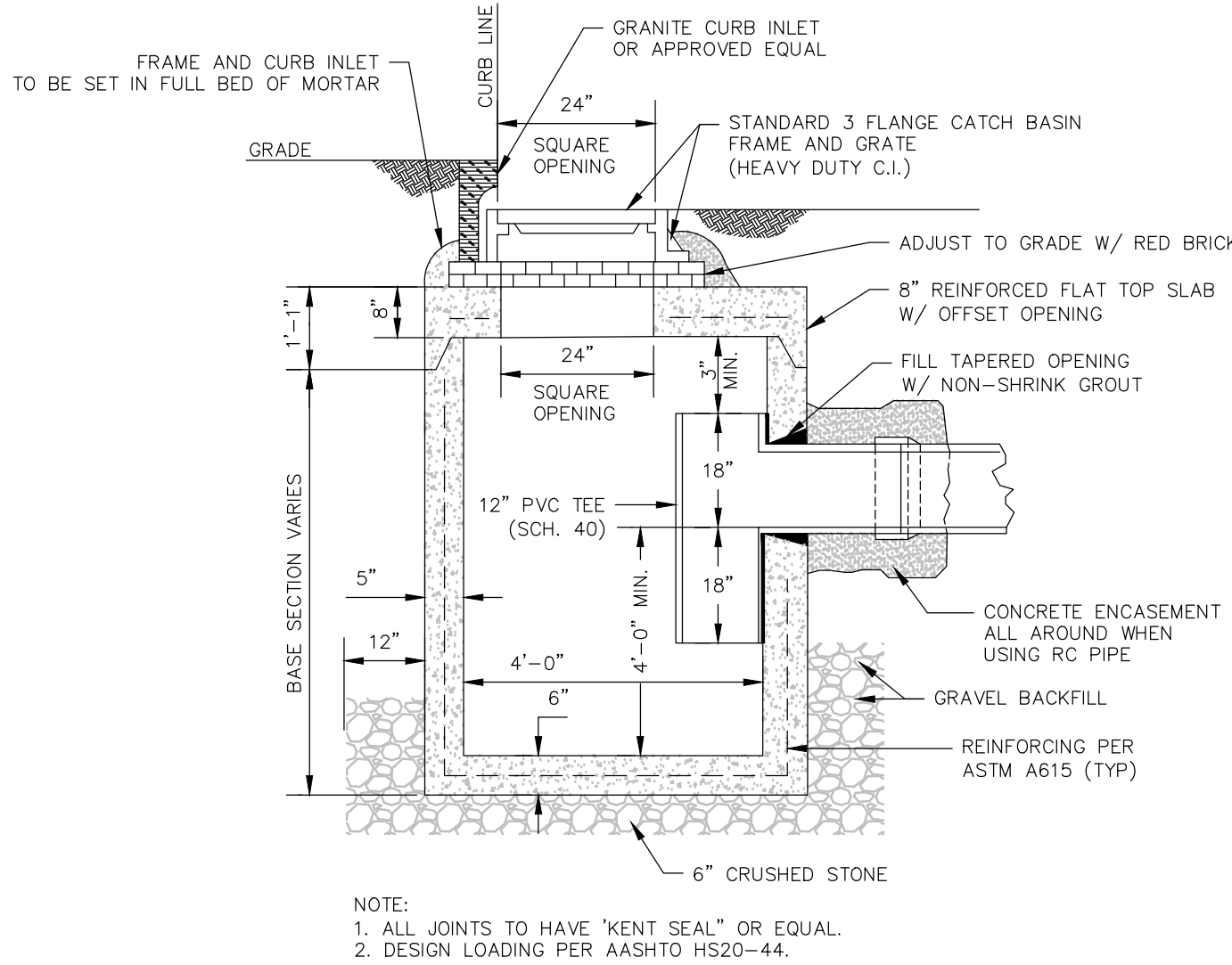
NUMBER OF ROWS WIDE	2 PIECES
NUMBER OF CHAMBERS LONG	2 PIECES
CHAMBER ROW WIDTH	6.6 FEET
CHAMBER ROW LENGTH	15.5 FEET
BED WIDTH	15.5 FEET
BED LENGTH	17.5 FEET
BED AREA REQUIRED	140.75 SQ. FEET
TOTAL NUMBER OF CHAMBERS	4 CHAMBERS

CULTEC CONTRACTOR 100 HD CHAMBER & BED DETAIL  
NTS



SEWER SERVICE CONNECTION DETAIL

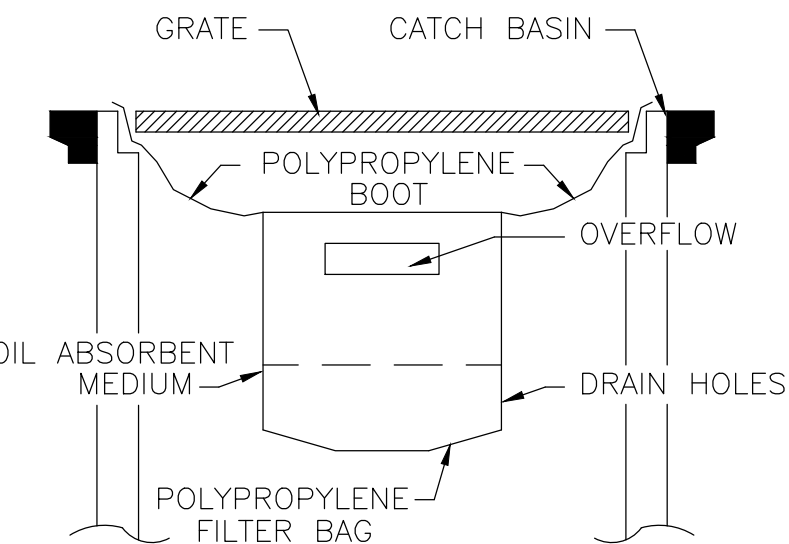
SCALE: N.T.S.



- NOTE:
- ALL JOINTS TO HAVE "KENT SEAL" OR EQUAL.
  - DESIGN LOADING PER AASHTO HS20-44.

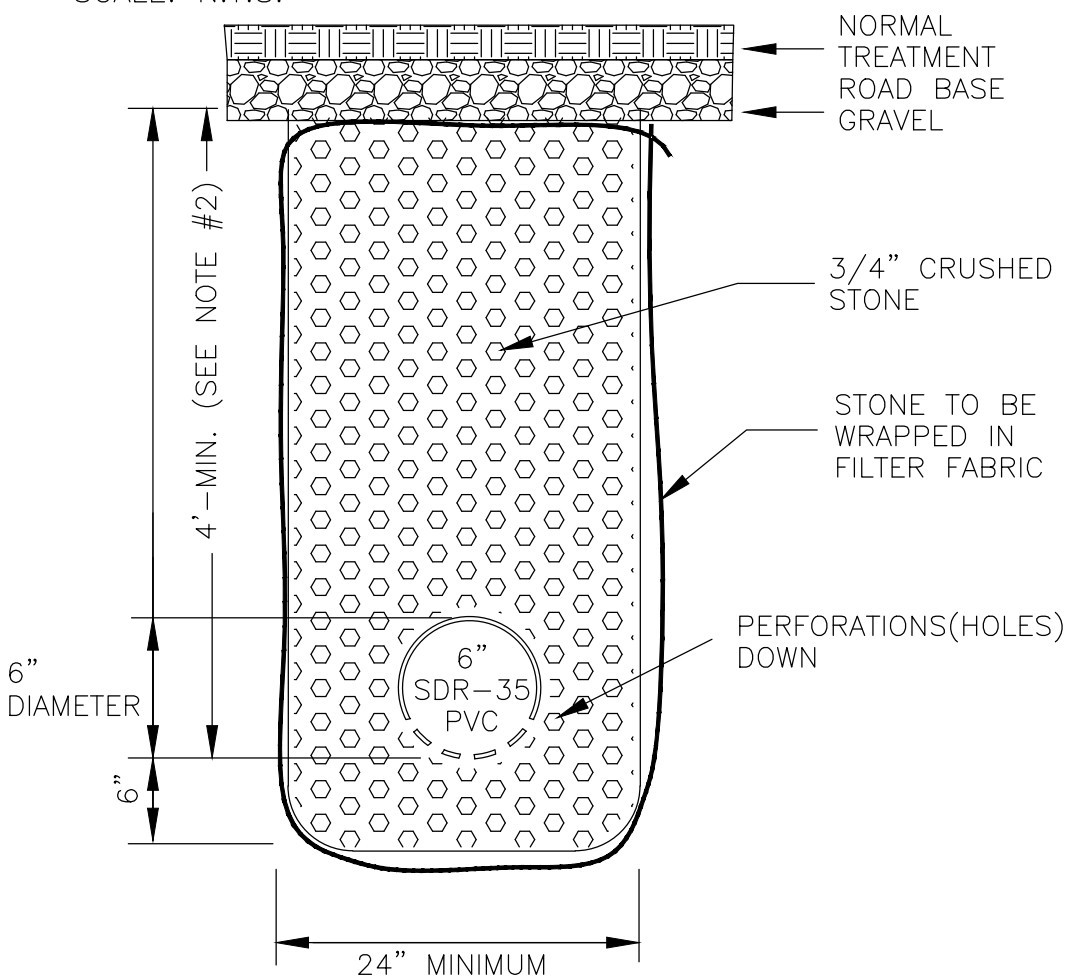
PRECAST CONCRETE CATCH BASIN WITH CURB INLET DETAIL

NTS



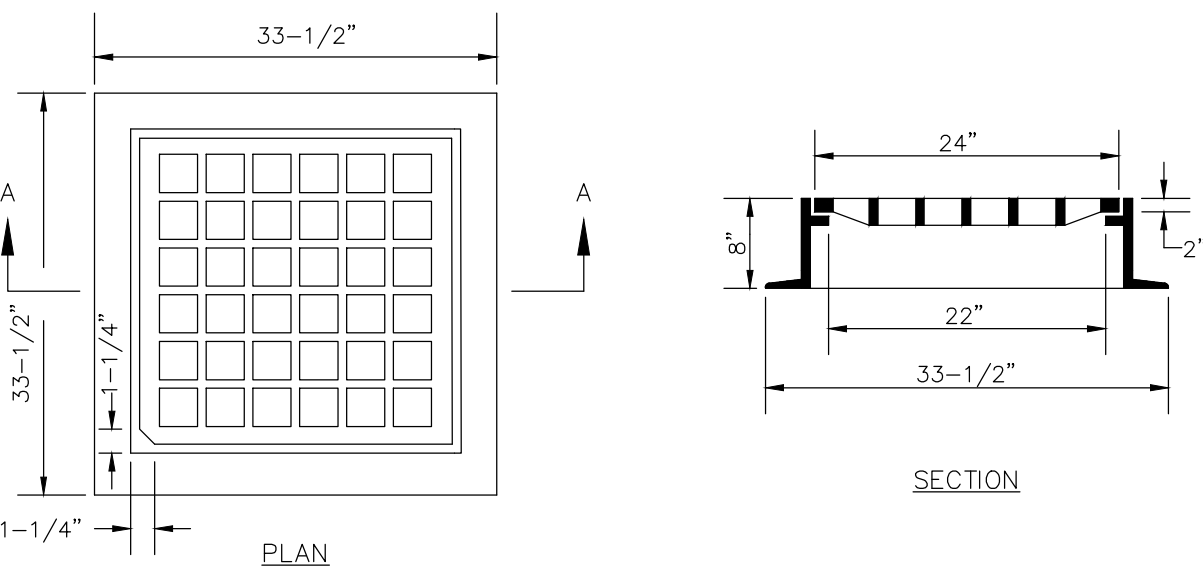
OIL & SEDIMENT PROTECTION AT CATCH BASINS WITHIN 100'

SCALE: N.T.S.



- NOTES:
- SUBDRAINS SHALL BE 6 INCH PERFORATED SDR 35 PVC, BEDDED IN CRUSHED STONE, OF 3/4 INCH GRADATION, IN A TWO (2) FOOT WIDE DRAIN TRENCH FILLED WITH SUCH CRUSHED STONE. CRUSHED STONE SHALL EXTEND HORIZONTALLY AND VERTICALLY TO MEET EITHER THE DRAINAGE LAYER OR THE GRAVEL SUB-BASE OF THE ROAD. CRUSHED STONE SHALL BE WRAPPED IN A SYNTHETIC, NON-WOVEN GEOTEXTILE FABRIC, WITH GEOTEXTILE OPENING SIZE OF 0.21 MM OR AS APPROPRIATE FOR THE SOIL TYPE. SUBDRAINS SHALL BE 48 INCHES BELOW FINISH GRADE AS MEASURED AT THE INVERT OF THE PIPE, AND SHALL BE LOCATED OUTSIDE THE EDGE OF PAVEMENT (BUT WITHIN THE ROAD RIGHT OF WAY) ON BOTH SIDES OF THE ROAD. 5.4.3.2 CLEANDOUTS SHALL BE LOCATED NOT MORE THAN 150 FEET FROM EACH RECEIVING STRUCTURE, AND SHALL HAVE CAST IRON COVERS SET TO FINISH GRADE. CLEANDOUT TO BE LOCATED AT THE UP-GRADE END OF THE SUBDRAIN.

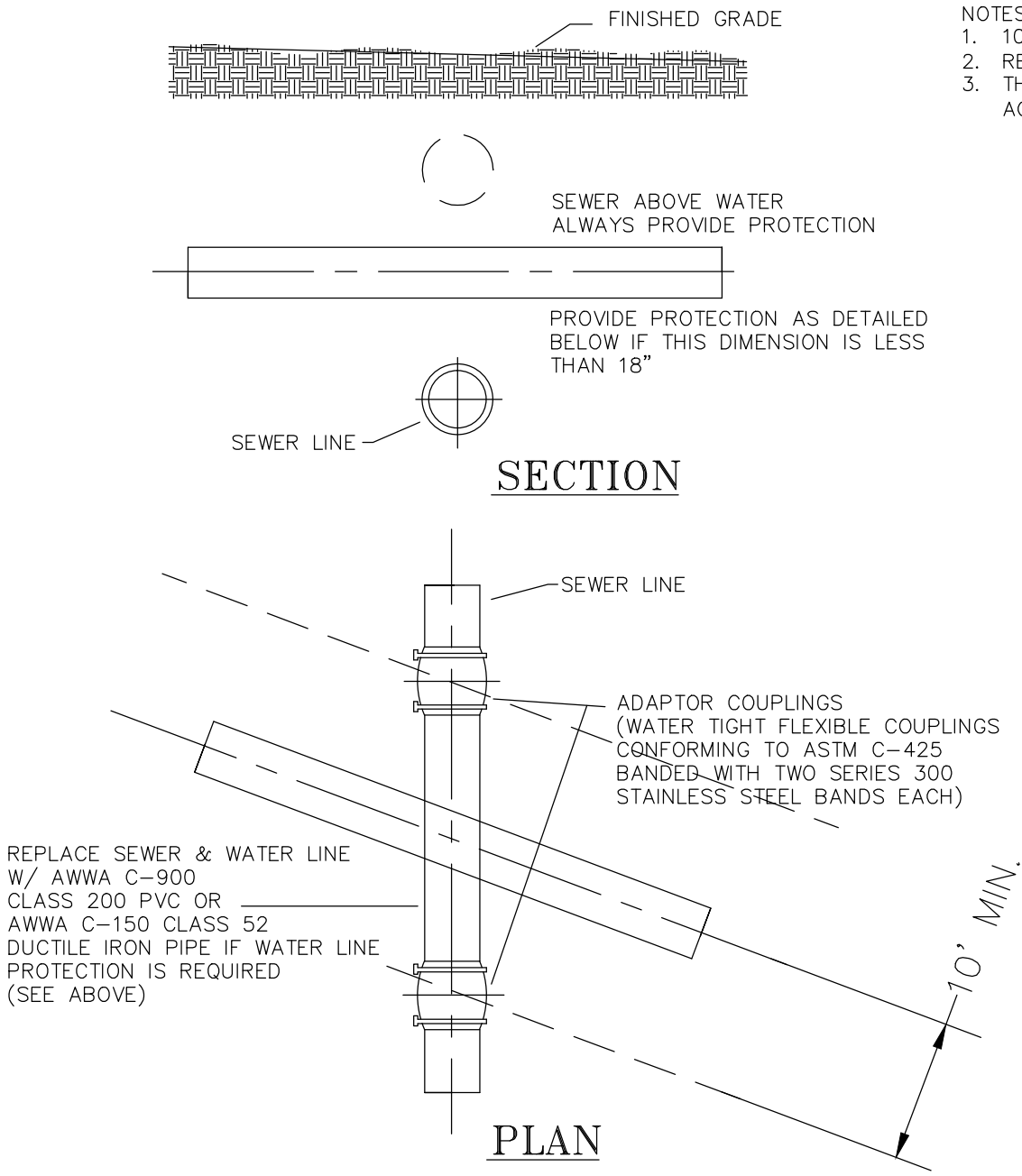
SUBDRAIN CROSS SECTION  
(NOT TO SCALE)



- NOTES:
- FRAME AND GRATE SHALL BE RATED FOR H-20 LOADING
  - MIN. FRAME WEIGHT  
4 FLANGE 295 LBS.  
3 FLANGE 265 LBS.
  - USE 3 FLANGE FRAMES AT CURB INLETS.

MUNICIPAL STANDARD  
CATCH BASIN FRAME & GRATE

SCALE: NOT TO SCALE

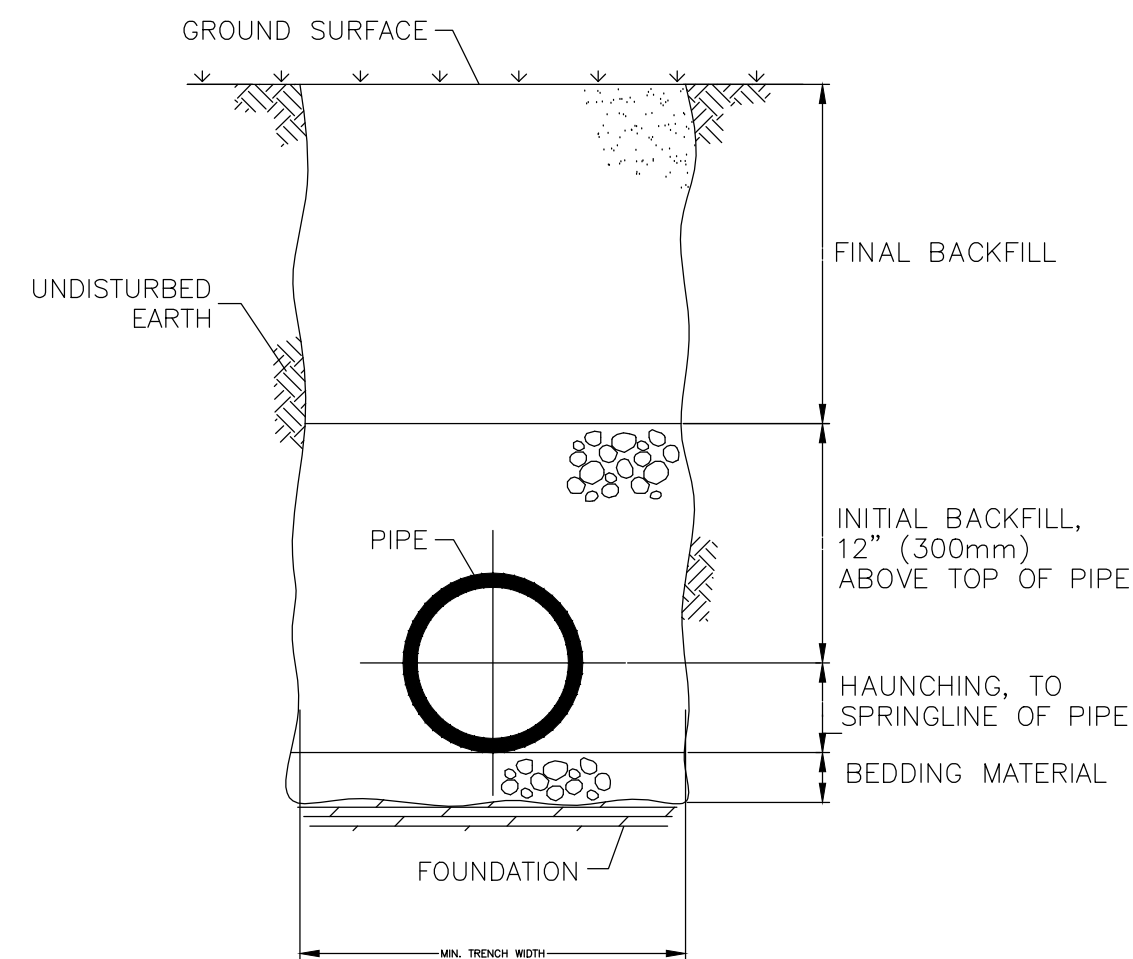


SEWER CROSSING DETAIL

N.T.S.

WHEN IT IS NOT POSSIBLE TO ACHIEVE 10' HORIZ. OR 18" VERT. SEPARATION (18" BETWEEN BOTTOM OF WATER MAIN AND TOP OF SEWER), BOTH THE WATER MAIN AND THE SEWER MAIN SHALL BE CONSTRUCTED OF MECHANICAL JOINT CEMENT-LINED DUCTILE IRON PIPE OR ANOTHER EQUIVALENT THAT IS WATERTIGHT AND STRUCTURALLY SOUND. BOTH PIPES SHALL BE PRESSURE TESTED TO 150 PSI TO ENSURE WATER TIGHTNESS.

TRENCH INSTALLATION DETAIL



TYPICAL TRENCH CROSS-SECTION  
(N.T.S.)

- BACKFILLING FOR STRUCTURES AND PIPES
- A) ALL BACKFILLING SHALL CONSIST OF GRANULAR MINERAL SOIL MATERIAL (EXCLUDING ORGANIC MATTER, BUILDING RUBBLE, SOLID WASTE, BOULDERS LARGER THAN 18 INCH IN ANY DIMENSION, OR ANY OTHER DELETERIOUS MATERIAL) UNIFORMLY DISTRIBUTED AND THOROUGHLY COMPACTED. WHEN SUITABLE BACKFILLING MATERIALS CANNOT BE OBTAINED FROM EXCAVATION, THE MATERIAL SHALL CONSIST OF SATISFACTORY BORROW.
- B) MECHANICAL TAMPERS SHALL BE USED IN COMPACTING BACKFILL FOR TRENCHES, AND IN HARD TO REACH AREAS AROUND MASONRY.
- C) NO BACKFILL WHATEVER SHALL BE PLACED ON OR AGAINST STRUCTURES, PIPES, OR OTHER MASONRY, UNTIL PERMITTED BY THE PLANNING BOARD. FILL SHALL BE FORMED OF SUCCESSIVE LAYERS NOT MORE THAN SIX INCHES (6") IN DEPTH, UNIFORMLY DISTRIBUTED AND EACH LAYER THOROUGHLY COMPACTED.
- D) NO LOAD GREATER THAN EIGHT (8) TONS SHALL BE MOVED OVER ANY PIPE UNTIL A FULLY COMPACTED BACKFILL OF AT LEAST TWO FEET (2') HAS BEEN PLACED OVER THE TOP OF THE PIPE. COMPLIANCE WITH THIS REQUIREMENT IS NOT TO BE CONSTRUED AS RELIEVING THE CONTRACTOR OF ANY RESPONSIBILITY CONCERNING DAMAGE TO THE PIPE.
- E) MATERIAL USED FOR BACKFILLING TO A POINT TWO FEET (2') OVER THE PIPE SHALL CONTAIN NO STONES LARGER THAN THREE INCHES (3") IN GREATEST DIMENSION.
- F) BACKFILL BELOW THE HAUNCHES SHALL BE PLACED IN SIX INCH (6") LAYERS AND COMPACTED MECHANICALLY ON BOTH SIDES OF THE PIPE WITH RAILROAD TAMPERS OR APPROVED MECHANICAL RAMMERS WHICH SHALL NOT COME IN CONTACT WITH THE PIPE. BACKFILL ABOVE THE HAUNCHES SHALL BE PLACED IN SIX INCH (6") LAYERS AND COMPACTED AS DIRECTED. BACKFILL MATERIAL SHALL BE MOIST PRIOR TO AND DURING COMPACTION.
- G) BACKFILL MATERIAL FOR THE PIPE BEDDING SHALL CONSIST OF GRAVEL BORROW, SCREENED GRAVEL, OR CRUSHED STONE NO GREATER THAN ONE- AND-A-HALF-INCH (1 1/2") GRADATION TO TWELVE INCHES (12") OVER THE CROWN OF THE PIPE. THE MATERIAL EXCAVATED FROM THE TRENCH MAY BE USED FOR THE PIPE BEDDING IF IT IS OF ACCEPTABLE GRADE GRAVEL AND APPROVED BY THE PLANNING BOARD. IF DIRECTED BY THE PLANNING BOARD, BACKFILL MATERIAL ABOVE THE PIPE BEDDING SHALL CONSIST OF GRAVEL BORROW. BACKFILL MATERIAL FOR SEWER PIPE BEDDING SHALL CONSIST OF SCREENED GRAVEL TO TWELVE INCHES (12") OVER THE CROWN OF THE PIPE, AS REQUIRED BY THE BOARD OF SEWER COMMISSIONERS.
- H) IN ALL CASES THE FILLING MATERIAL SHALL BE THOROUGHLY COMPACTED. PUDDLING THE BACKFILL WILL NOT BE PERMITTED.

NOTES:

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CERTIFICATE OF NO APPEAL

DECISION OF THE GRAFTON PLANNING BOARD APPROVING THIS PLAN RECORDED IN THE OFFICE OF THE TOWN CLERK

NO NOTICE OF APPEAL THEREFROM WAS RECEIVED BY THE TOWN CLERK DURING THE 20 DAYS FOLLOWING.

TOWN CLERK _____ DATE _____

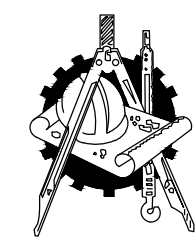
DEEDS OF EASEMENTS TO BE RECORDED HEREWITH.

GRAFTON  
PLANNING BOARD

APPROVAL UNDER THE SUBDIVISION  
CONTROL LAW IS REQUIRED

_____  
_____  
_____  
_____

DATE: _____  
BEING A MAJORITY OF THE BOARD



hs&t group, inc.

PROFESSIONAL CIVIL ENGINEERS & LAND SURVEYORS  
75 HAMMOND STREET - 2ND FLOOR  
WORCESTER, MASSACHUSETTS 01610-1723  
PHONE: 508-757-4944 EMAIL: INFO@HSTGROUP.NET  
FAX: 508-752-8895 WWW.HSTGROUP.NET

DEFINITIVE SUBDIVISION  
ABBY WOODS  
IS CARROLL ROAD

APPLICANT/OWNER: CENTRAL MASSACHUSETTS HOME BUILDERS LLC  
125 OLEAN STREET  
WORCESTER, MA 01602

FIELD:	DJT	DATE:	02/11/2020	FLD BOOK:	307B
COMP'D:	DJT	SCALE:	AS SHOWN	FLD PAGE:	48
CAD:	LLW	ZONE:	R-20	CARRWK2-DEF-REV.DWG	
CHECKED:	DJT, HH	JOB#:	2650	DWG#:	4391

DETAIL SHEET

SHEET

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STANDARD CROSS SECTION  
MINOR STREET "B"  
N.T.S.

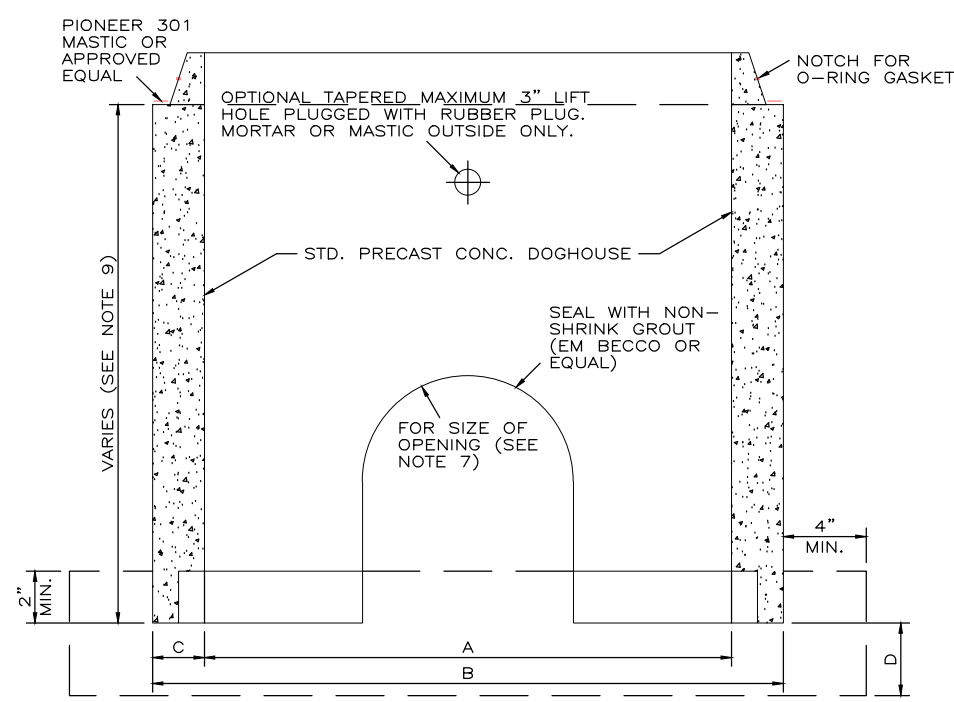
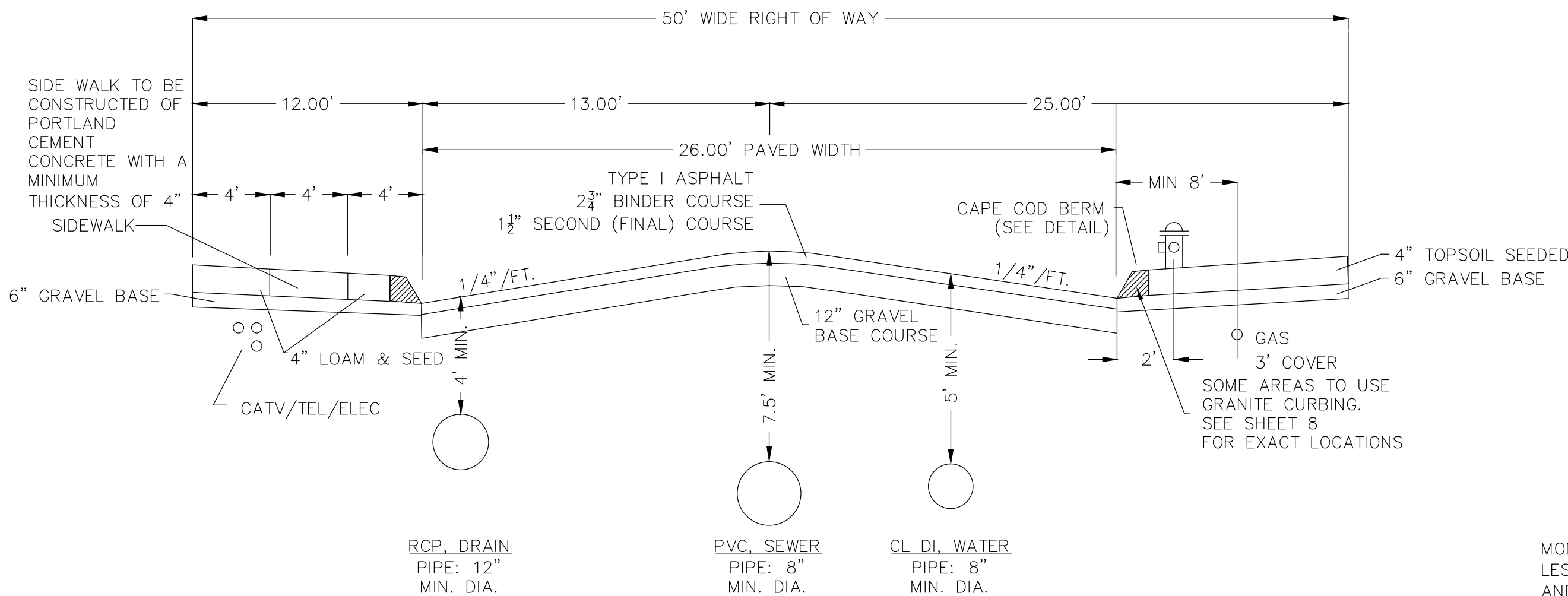
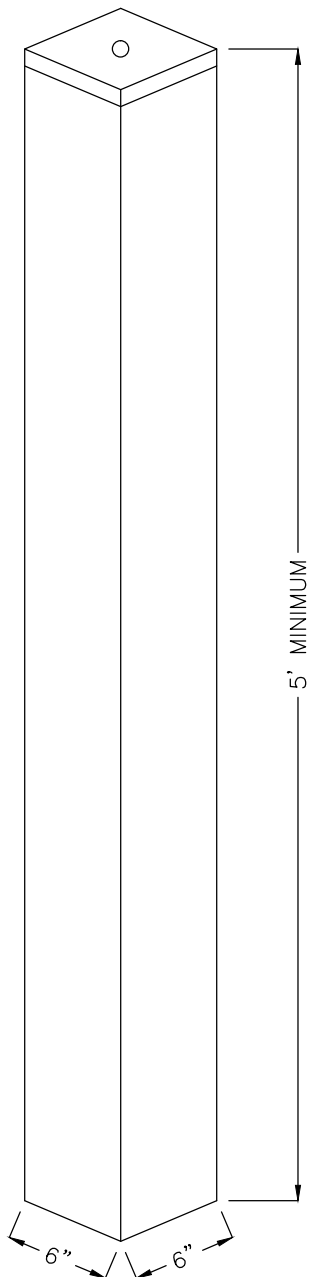


CHART "A"			
MH	4'-0"	5'-0"	6'-0"
A	48"	60"	72"
B	58"	72"	86"
C	5"	6"	7"
D	6"	8"	10"

NOTES:  
1. CONCRETE TO BE CLASS "C"  
2. ALL REINFORCING TO MEET REQUIREMENTS OF CURRENT A.S.T.M. SPECIFICATION C-476  
3. MANHOLE SECTIONS TO MEET REQUIREMENTS OF CURRENT A.S.T.M. SPECIFICATION C-476  
4. TAPERED JOINT WITH O-RING GASKET TO MEET CURRENT A.S.T.M. SPECIFICATION C-561  
5. DOGHOUSE OPENING MAY ONLY BE USED WHEN PLACING A NEW MANHOLE OVER AN EXISTING LINE. OTHERWISE, THE OPENING MUST BE CAST. SIZE, LOCATION AND ANGLE OF ENTRY SHALL BE AS REQUIRED BY THE PLANS.  
6. JOINT CONFIGURATION MAY BE CAST BELL-UP OR SPIGOT-UP  
7. HOLES IN PRECAST UNITS ARE TO BE 4" MIN. TO 8" MAX. LARGER THAN THE OUTSIDE DIAMETER OF THE PROPOSED PIPE.  
8. BASE SECTION TO PROVIDE 6" MIN. CLEARANCE BETWEEN TOP OF PIPE OPENING AND BOTTOM OF BELL AND SPIGOT JOINT.

PRECAST CONCRETE MANHOLE  
DOGHOUSE BASE  
(NOT TO SCALE)

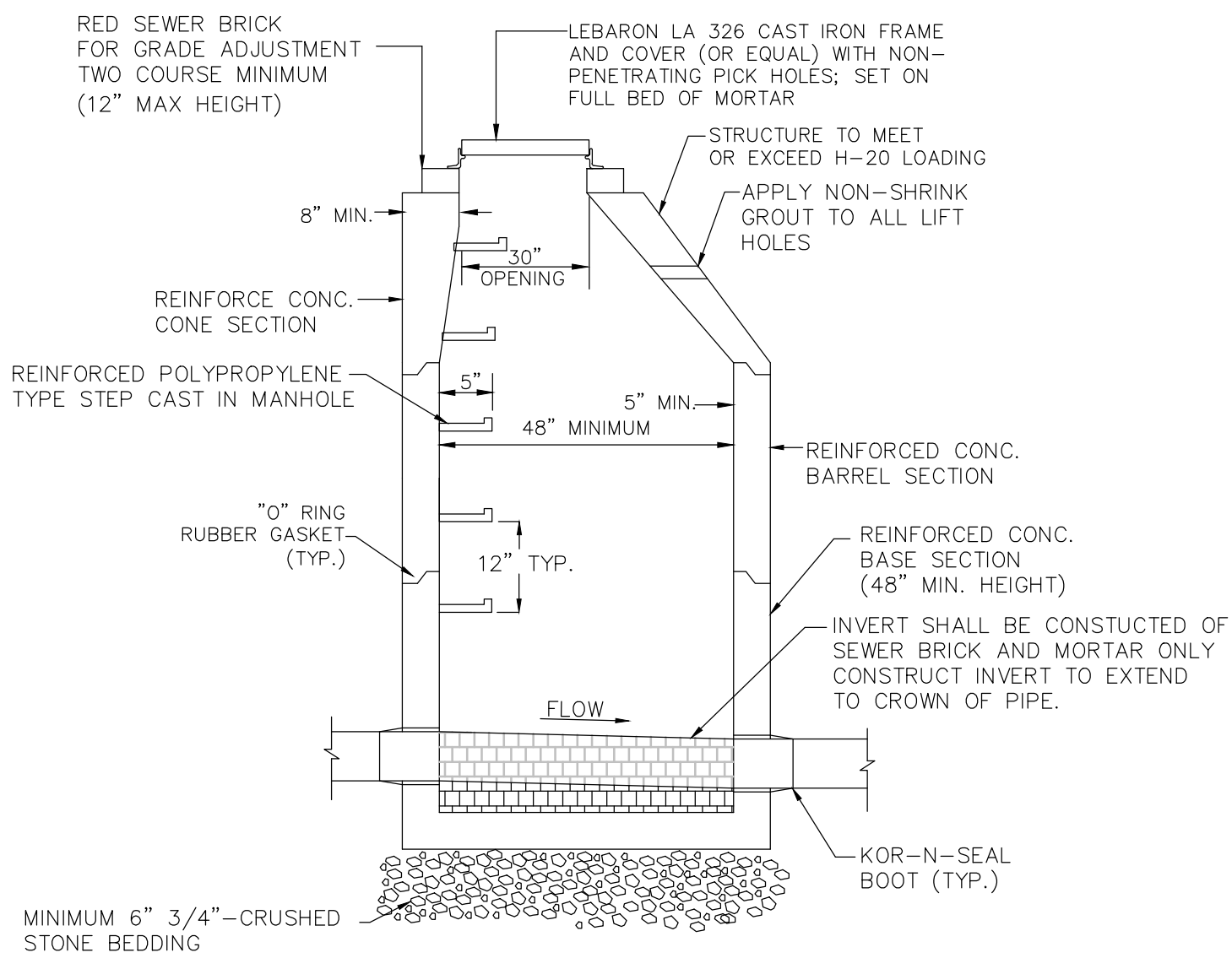


MONUMENTS 5.11.1 MONUMENTS SHALL BE A STANDARD PERMANENT GRANITE OF NOT LESS THAN FIVE FEET (5') IN LENGTH AND NOT LESS THAN SIX INCHES (6") IN WIDTH AND BREADTH AND A ONE-HALF INCH (1/2") DIAMETER HOLE ONE AND ONE-HALF INCHES (1 1/2") DEEP SHALL BE DRILLED IN THE CENTER OF THE TOP SURFACE AND FILLED SECURELY WITH A LEAD PLUG. (SECTION 710). 5.11.2 SAID MONUMENTS SHALL BE INSTALLED AT THE TIME OF FINAL GRADING WITH THE TOP FLUSH WITH THE TOP FINAL GRADED SURFACE. (PLATES 506.1.0 AND 506.2.0 CONSTRUCTION MANUAL). 5.11.4 NO PERMANENT MONUMENTS SHALL BE INSTALLED UNTIL ALL ROAD CONSTRUCTION WHICH WOULD DESTROY OR DISTURB THE MONUMENTS IS COMPLETED.

BOUNDS MUST BE INSTALLED FLUSH TO THE FINISHED SURFACE IN GRASSED AREAS AND INSTALLED 6" TO 9" ABOVE THE FINISHED SURFACE IN WOODED AREAS.

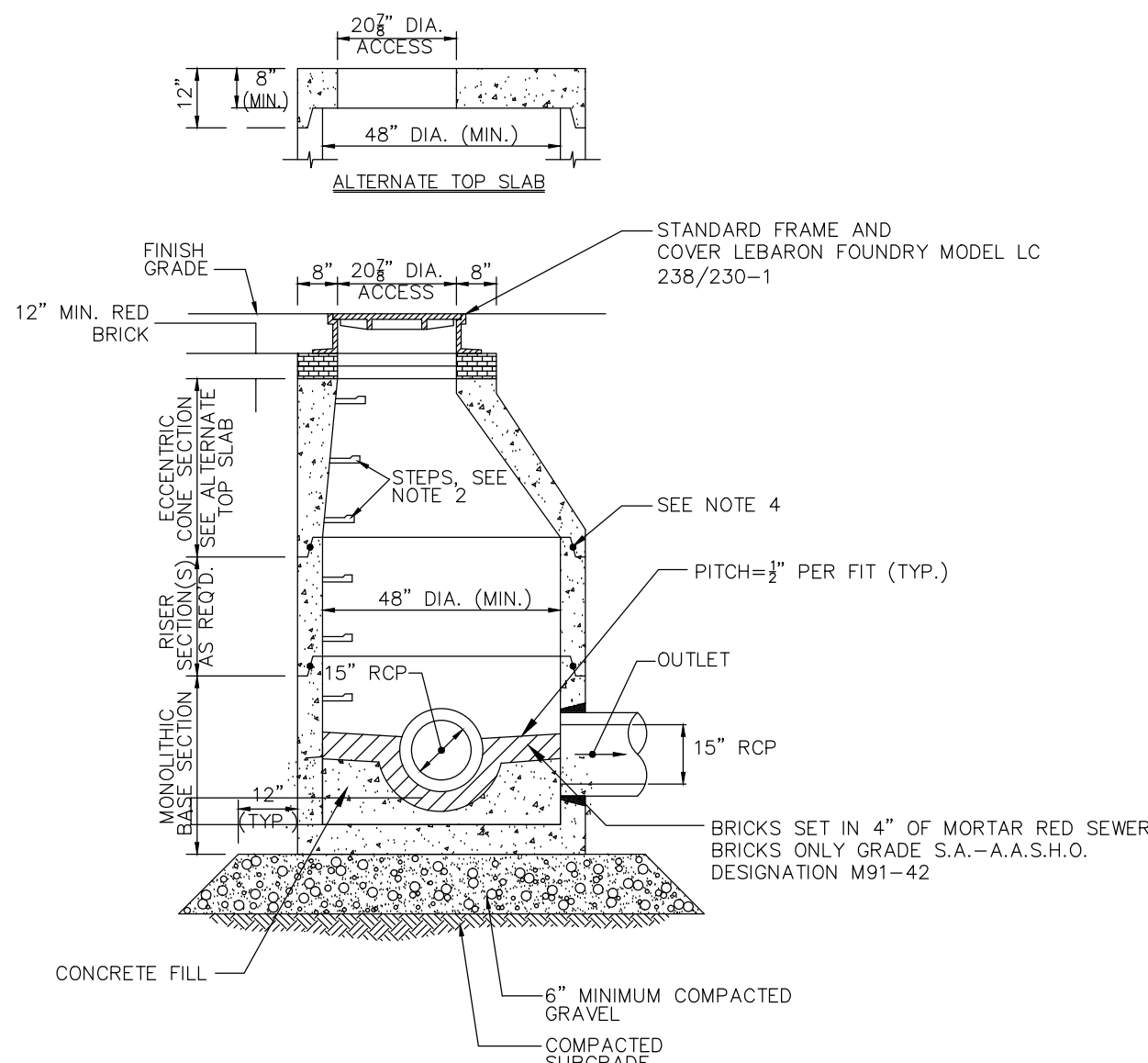
GRANITE MONUMENT

SCALE:



SEWER MANHOLE

SCALE: NO SCALE

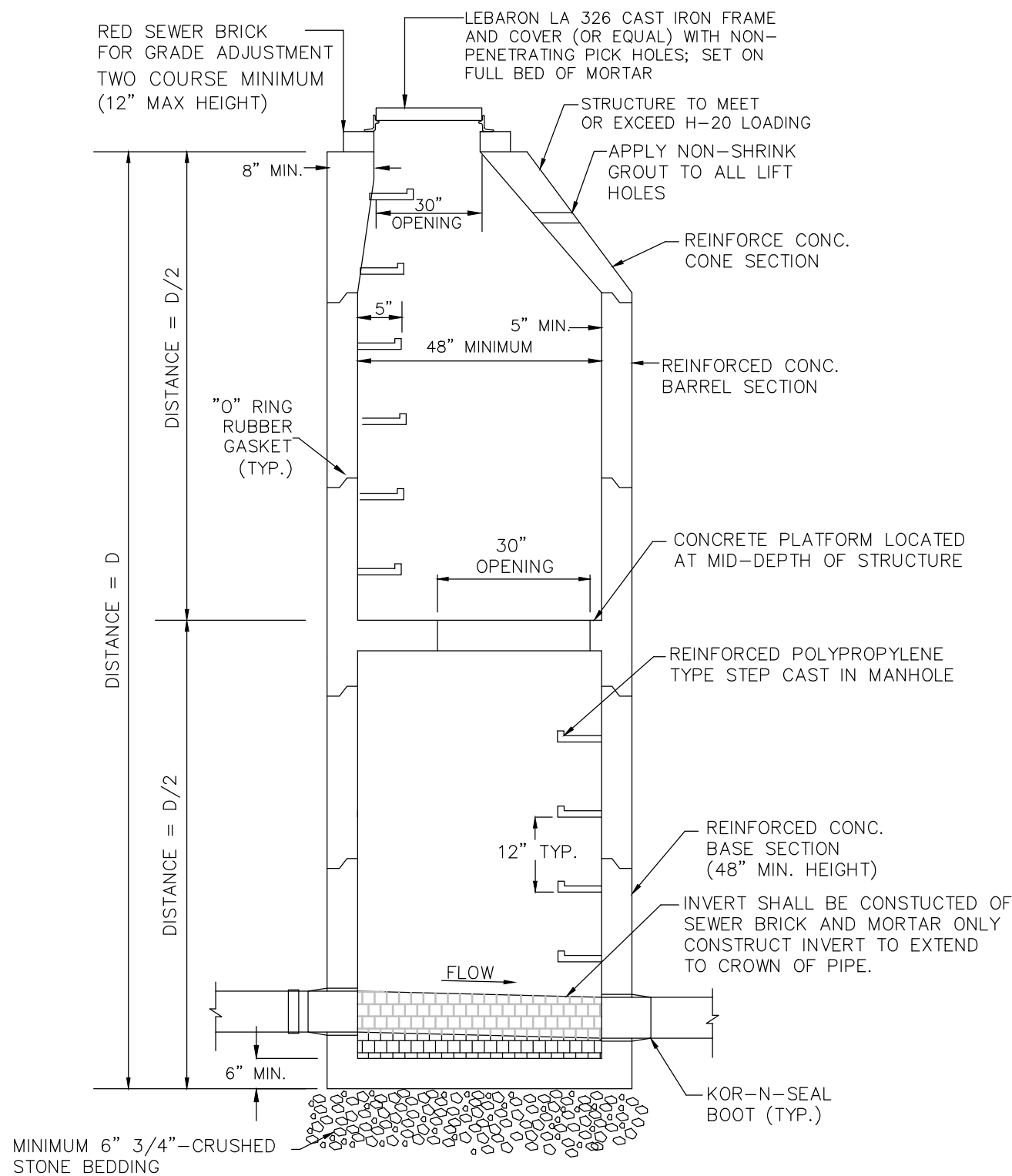


NOTES:  
1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.  
2. COPOLYMER MANHOLE STEPS SHALL BE INSTALLED AT 12" O.C. FOR THE FULL DEPTH OF THE STRUCTURE.  
3. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.  
4. "D" RING JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.

DRAIN MANHOLE

N.T.S.

NOTE:  
LADDER STEPS BELOW PLATFORM SHALL BE LOCATED ON THE OPPOSITE SIDE OF THE MANHOLE FROM THE STEPS ABOVE. PROVIDE A 30"Ø OPENING IN PLATFORM TO ACCESS LOWER STEPS. THE PLATFORM OPENING SHALL BE LOCATED ON THE SAME SIDE OF THE MANHOLE AS THE LOWER STEPS.



DEEP MANHOLE DETAIL

SCALE:

NOTES:

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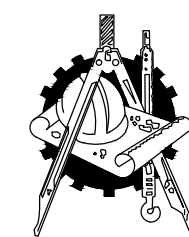
TOWN CLERK DATE

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GRAFTON  
PLANNING BOARD

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED

DATE:  
BEING A MAJORITY OF THE BOARD



hs&t group, inc.  
PROFESSIONAL CIVIL ENGINEERS & LAND SURVEYORS  
75 HAMMOND STREET - 2ND FLOOR  
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FAX: 508-752-8895 WWW.HSTGROUP.NET

DEFINITIVE SUBDIVISION

ABBY WOODS  
18 CARROLL ROAD

APPLICANT/OWNER: CENTRAL MASSACHUSETTS HOME BUILDERS LLC  
125 OLEAN STREET  
WORCESTER, MA 01602

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DETAIL SHEET

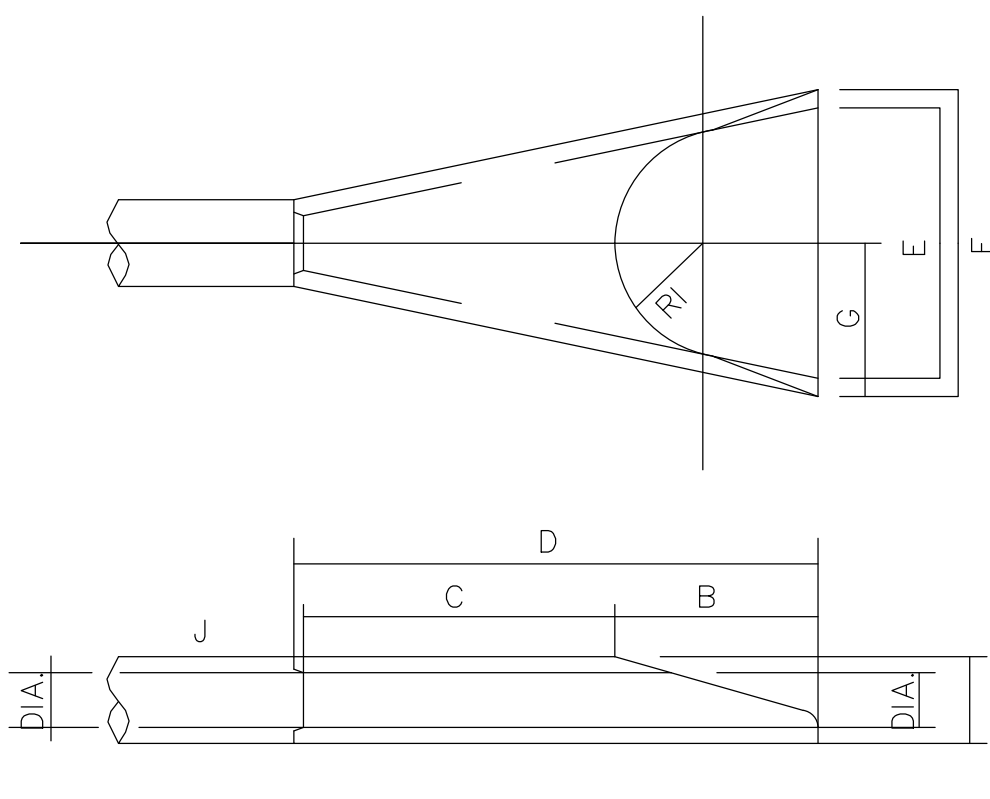
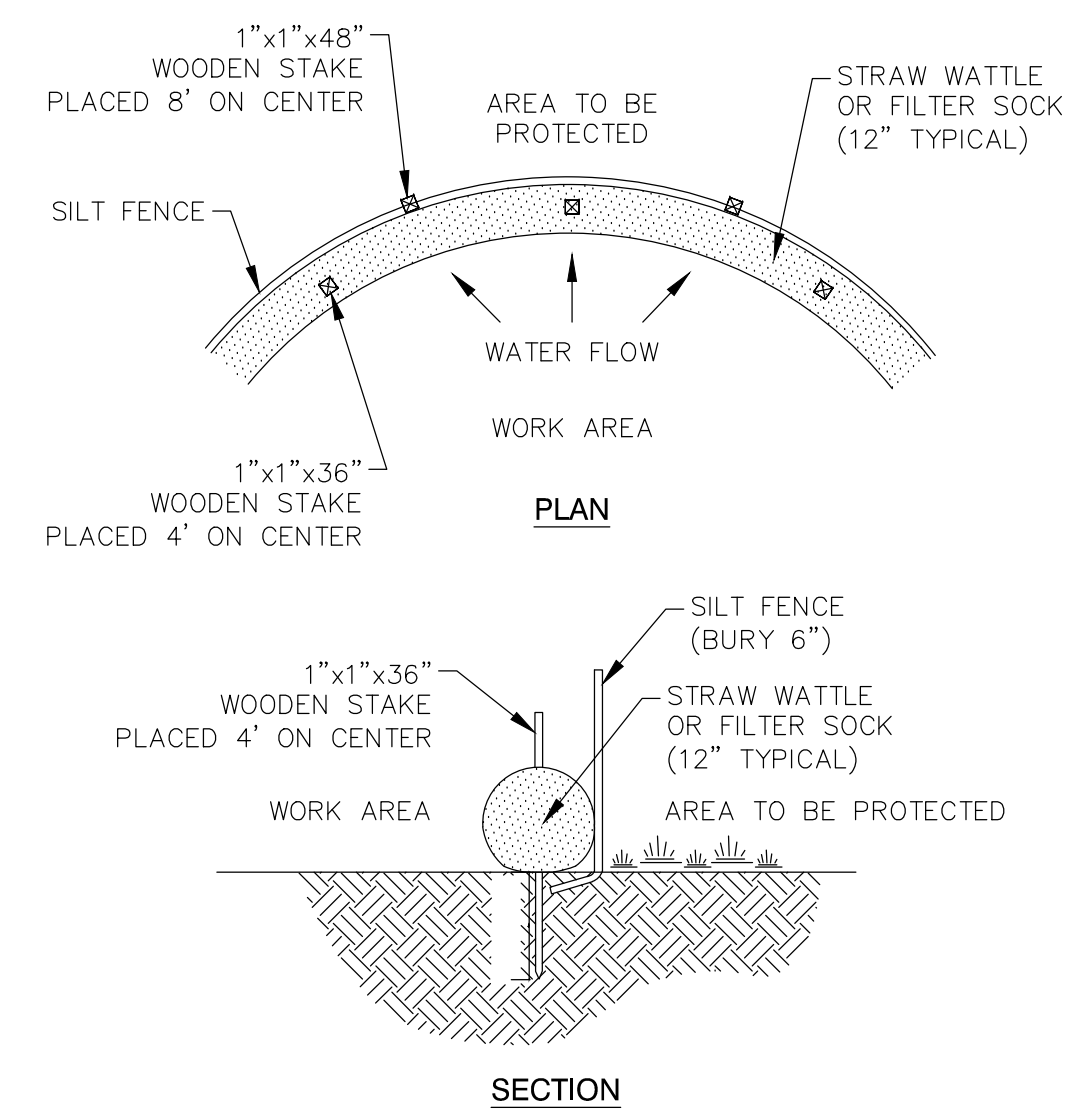
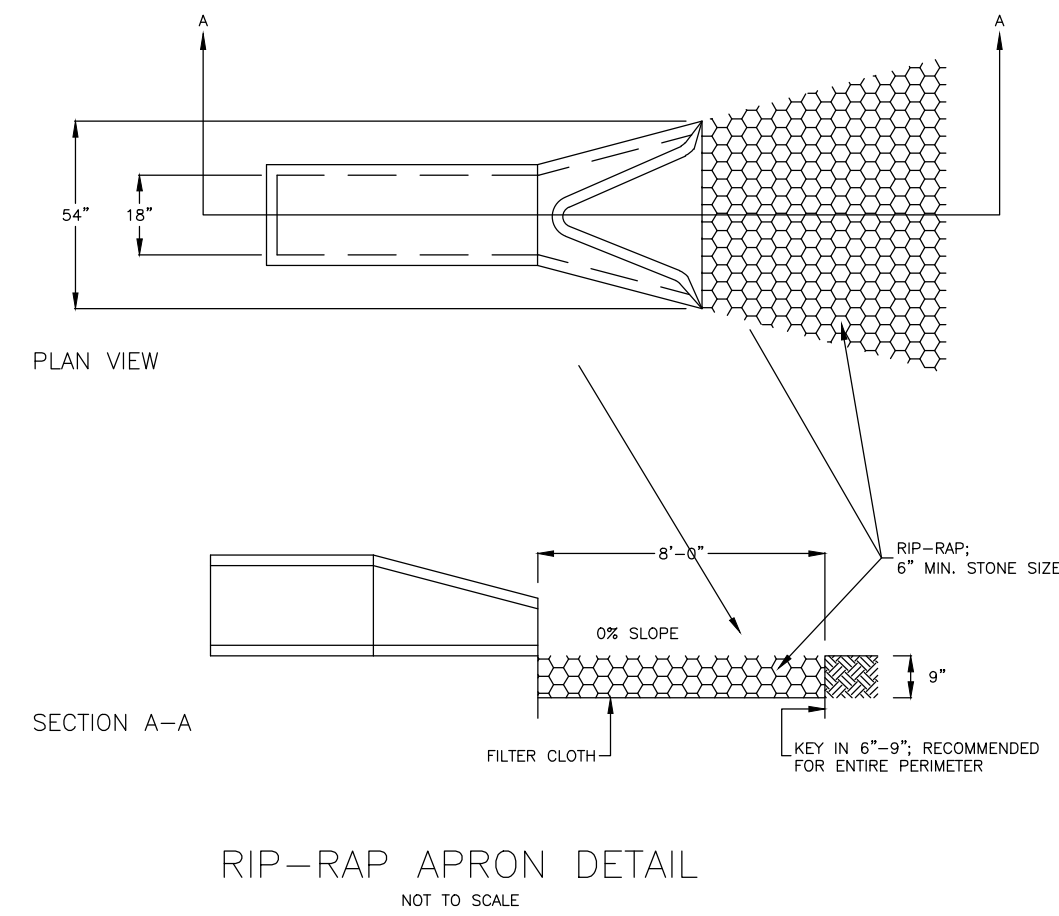
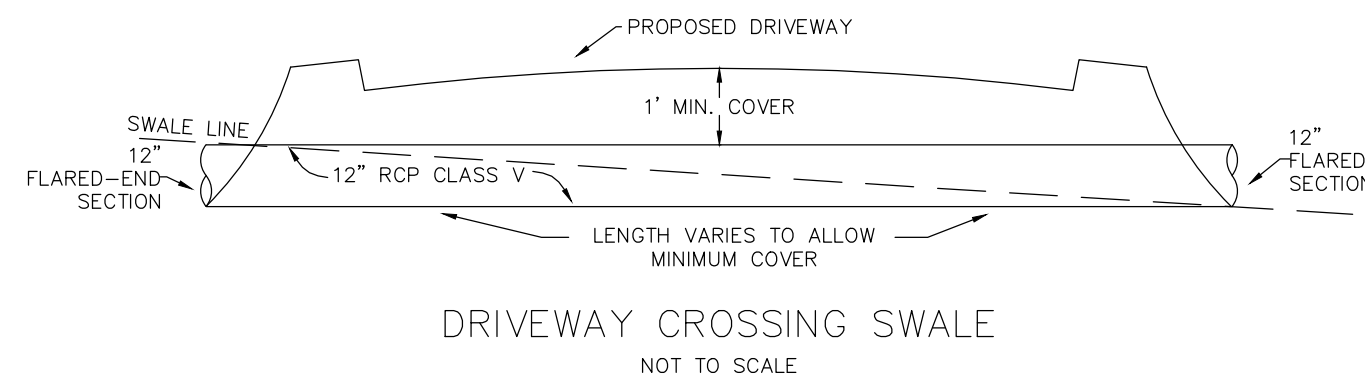
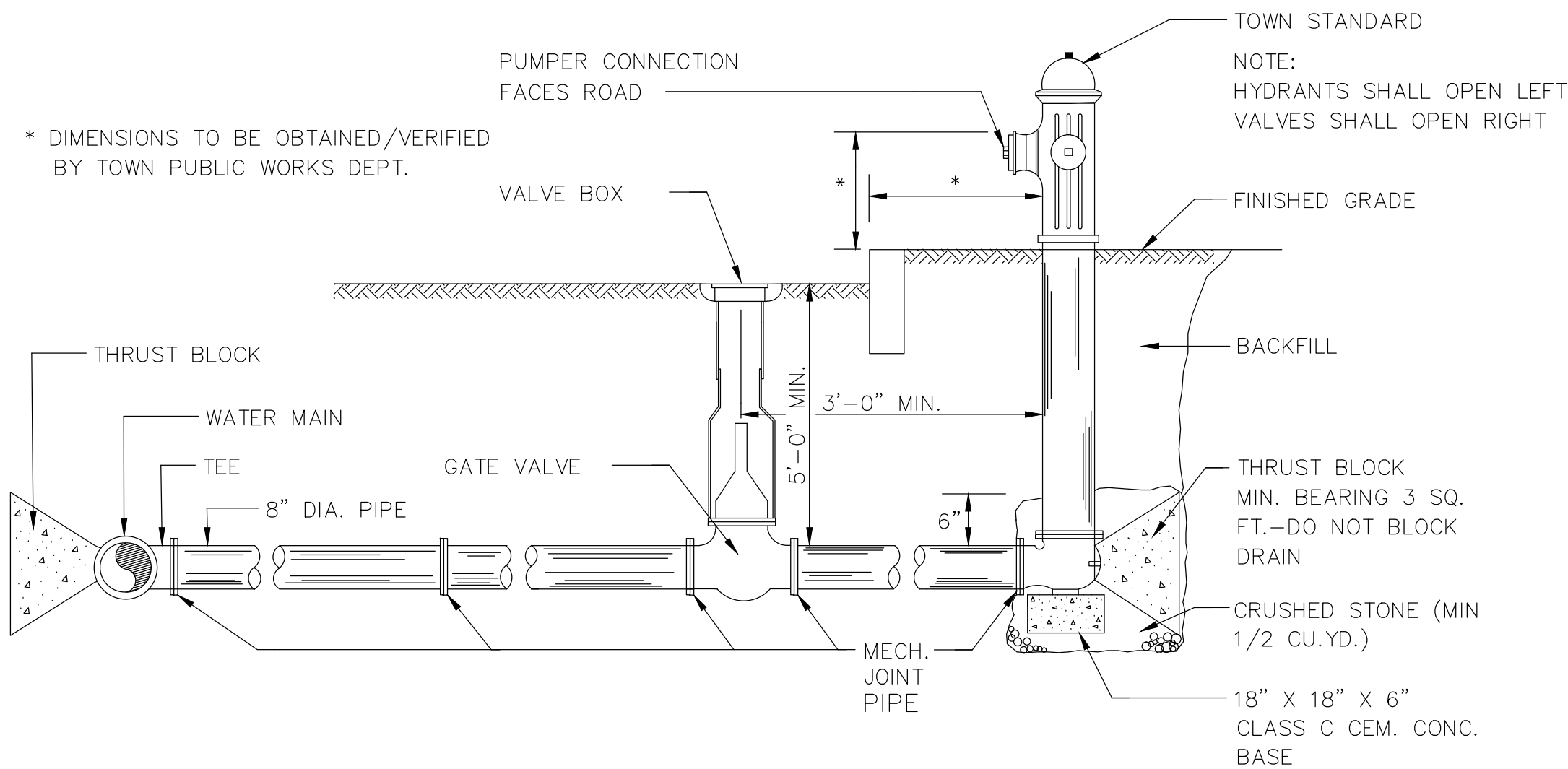
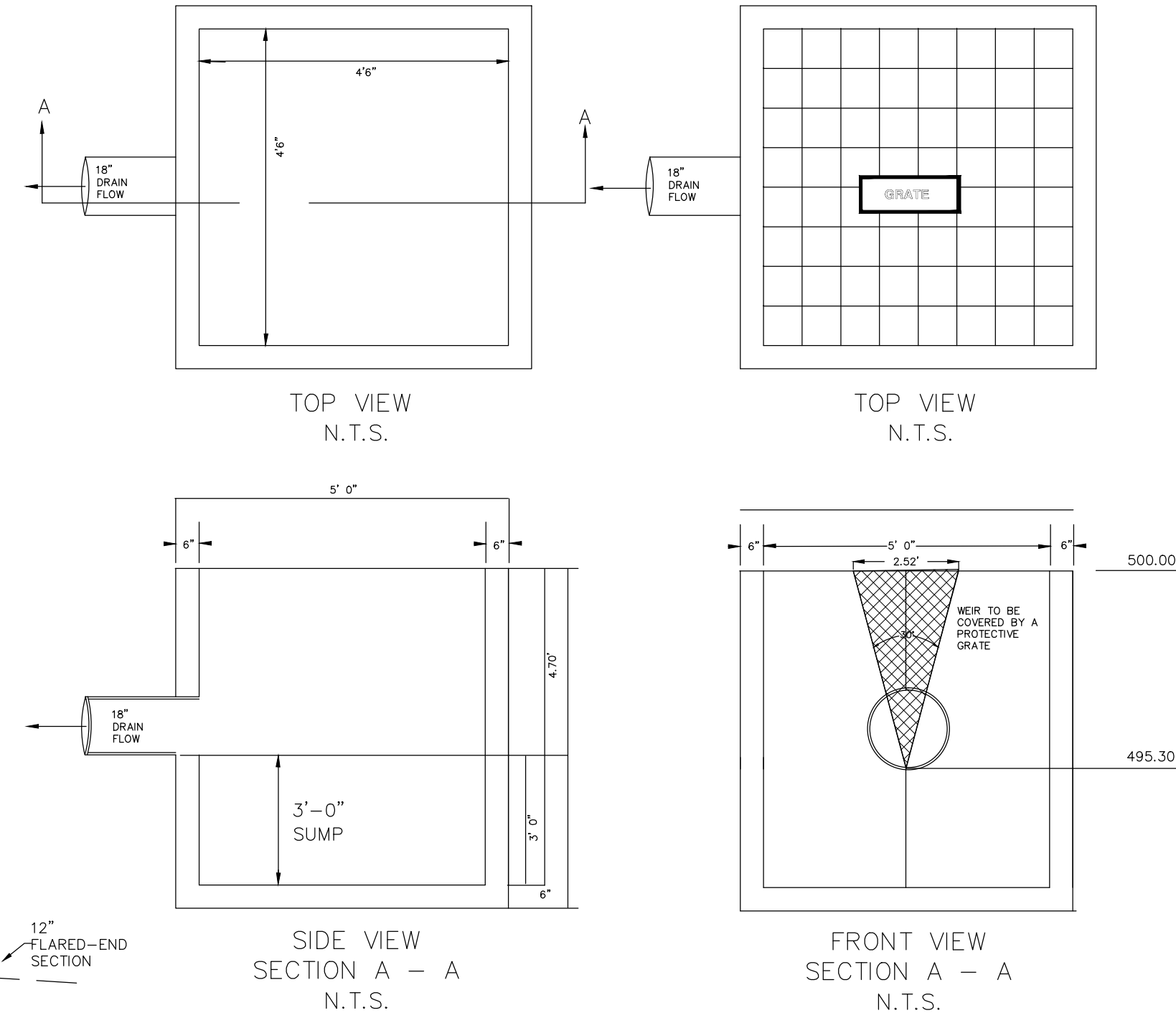
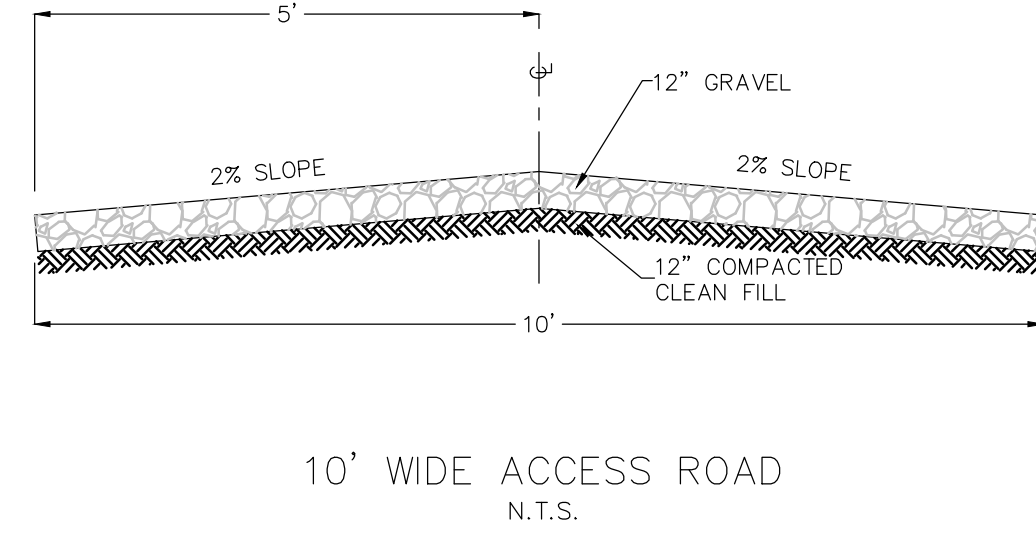
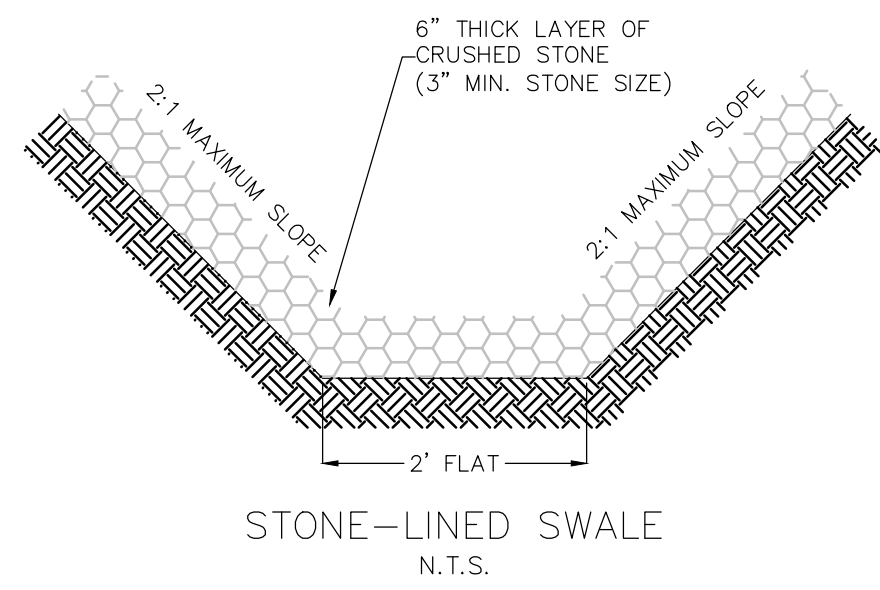
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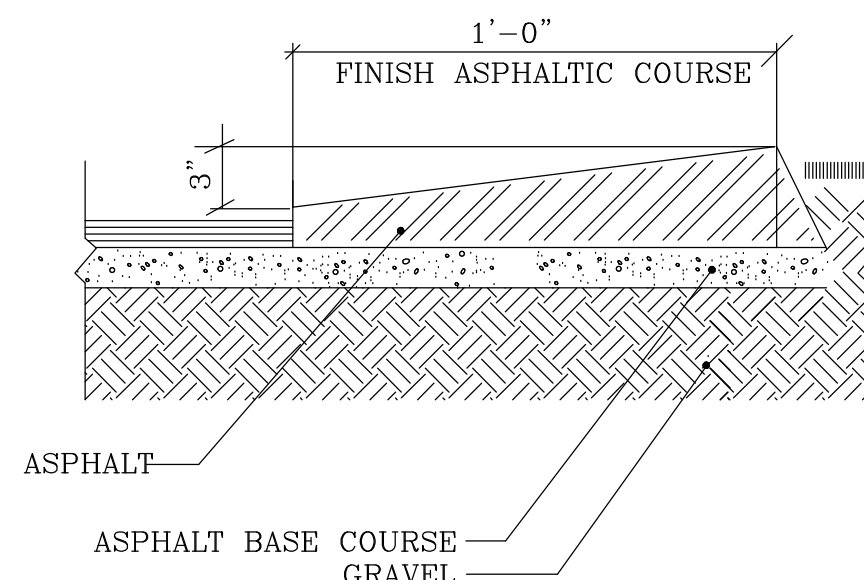


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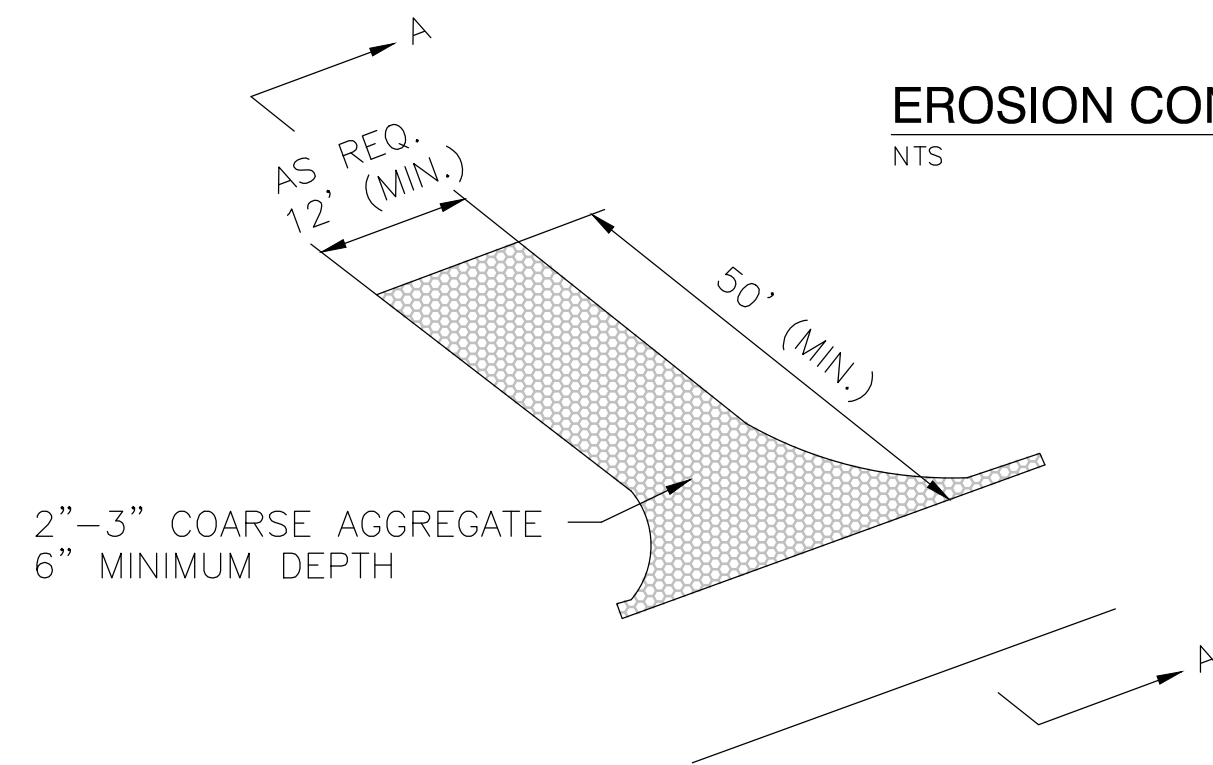
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TYPICAL FLARED END SECTION  
NOT TO SCALE



CAPE COD BERM DETAIL  
NOT TO SCALE



CRUSHED STONE CONSTRUCTION ENTRANCE  
SCALE: N.T.S.

- NOTES:
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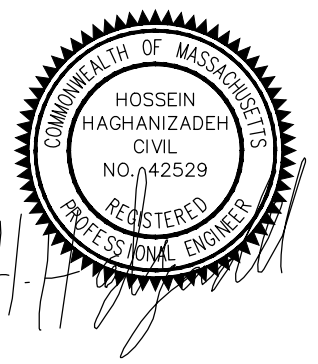
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**GRAFTON**  
**PLANNING BOARD**  
APPROVAL UNDER THE SUBDIVISION  
CONTROL LAW IS REQUIRED

_____  
_____  
_____  
_____

DATE: _____  
BEING A MAJORITY OF THE BOARD



DEFINITIVE SUBDIVISION  
**ABBY WOODS**  
**18 CARROLL ROAD**

APPLICANT/OWNER: CENTRAL MASSACHUSETTS HOME BUILDERS LLC  
125 OLEAN STREET  
WORCESTER, MA 01602

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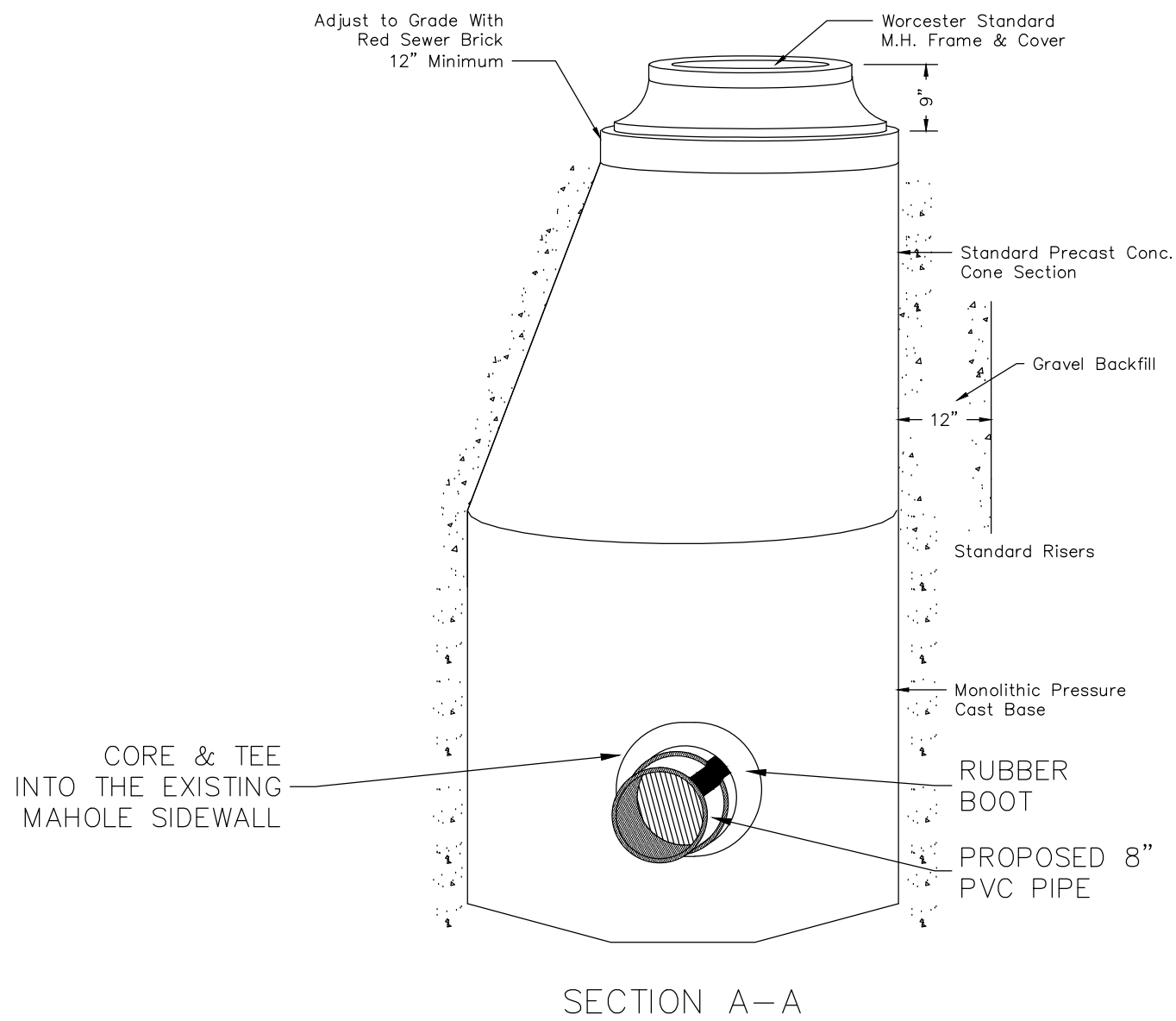
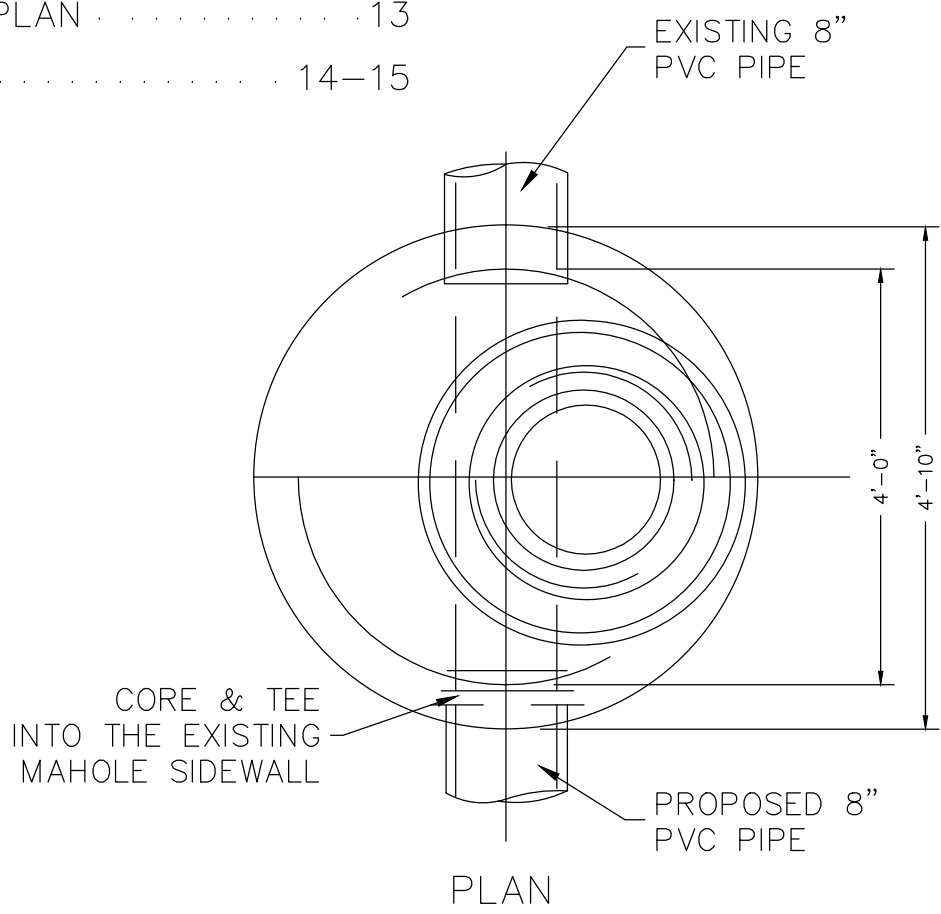
DETAIL SHEET

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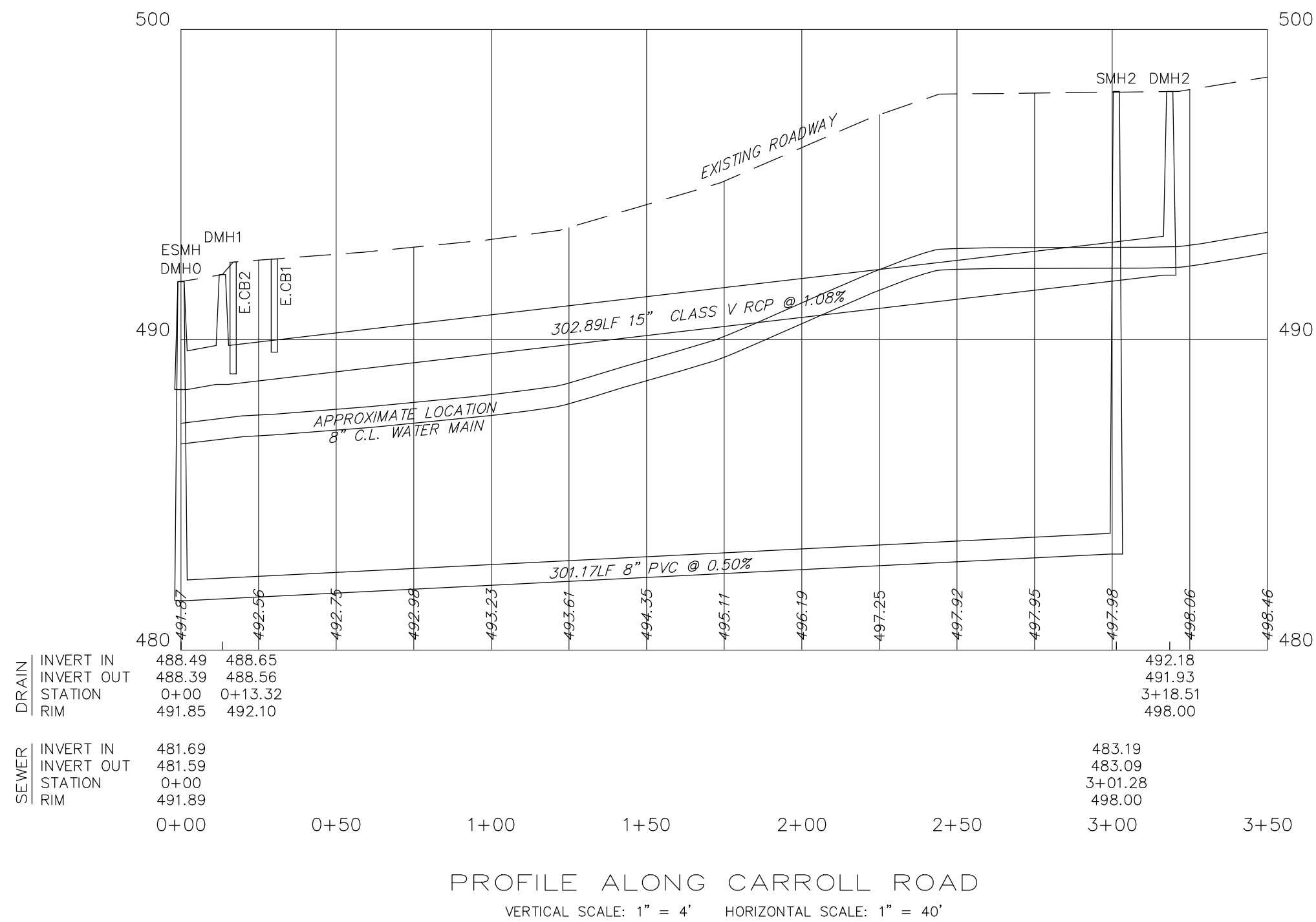
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CONNECTION OF SEWER MAIN  
TO EXISTING SANITARY MANHOLE

DETAIL NOT TO SCALE



LEAKAGE TEST PROCEDURES:  
(PER TOWN OF GRAFTON WASTEWATER TREATMENT FACILITY)

- GRAVITY SEWERS SHALL BE TESTED WITH LOW PRESSURE AIR.
- THE CONTRACTOR SHALL HAVE THE PROPER PLUGS, AND OTHER EQUIPMENT REQUIRED TO PERFORM ALL TESTS AS REQUIRED BY THE ENGINEER. TESTING OF EACH SECTION OF SEWER INSTALLED SHALL INCLUDE THE PORTIONS OF SERVICE CONNECTIONS THAT ARE TO BE INSTALLED UNDER THE CONTRACT.
- NO MORE THAN 1,000 FEET OF SEWER MAIN IS TO BE LAID BEFORE TESTING.
- AFTER COMPLETING BACKFILL OF THE WASTEWATER LINE, THE CONTRACTOR SHALL, AT HIS EXPENSE, CONDUCT A LINE ACCEPTANCE TEST USING LOW PRESSURE AIR. THE TEST SHALL BE PERFORMED ACCORDING TO THE STATED PROCEDURES AND IN THE PRESENCE OF THE ENGINEER.
  - FLUSH AND CLEAN THE LINE PRIOR TO TESTING, TO WET THE PIPE SURFACE AND CLEAN OUT DEBRIS.
  - ALL PNEUMATIC PLUGS SHALL BE SEAL TESTED BEFORE BEING USED IN THE ACTUAL TEST INSTALLATION. ONE (1) LENGTH OF PIPE SHALL BE LAID ON THE GROUND AND SEALED AT BOTH ENDS WITH THE PNEUMATIC PLUGS TO BE CHECKED. AIR SHALL BE INTRODUCED INTO THE PLUGS TO 25 PSIG. THE PLUGS SHALL HOLD AGAINST THIS PRESSURE WITHOUT BRACING AND WITHOUT MOVEMENT OF THE PLUGS OUT OF THE PIPE.
  - AFTER A MANHOLE TO MANHOLE REACH OF THE PIPE HAS BEEN BACKFILLED AND CLEANED, AND THE PNEUMATIC PLUGS ARE CHECKED BY THE ABOVE PROCEDURE, THE PLUGS SHALL BE PLACED IN THE LINE AT EACH MANHOLE AND INFLATED TO 25 PSIG. LOW PRESSURE AIR SHALL BE INTRODUCED INTO THIS SEALED LINE UNTIL THE INTERNAL AIR PRESSURE OF ANY GROUNDWATER THAT MAY BE OVER THE PIPE, AT LEAST TWO MINUTES SHALL BE ALLOWED FOR THE AIR PRESSURE TO STABILIZE.
  - AFTER THE STABILIZATION PERIOD (3.5 PSIG MINIMUM PRESSURE ON THE PIPE), THE AIR HOSE FROM THE CONTROL PANEL TO THE AIR SUPPLY SHALL BE DISCONNECTED. THE PORTION OF LINE BEING TESTED SHALL BE TERMED "ACCEPTABLE" IF THE TIME REQUIRED IN MINUTES FOR THE PRESSURE TO DECREASE FROM 3.5 TO 2.5 PSIG (GREATER THAN THE AVERAGE BACK PRESSURE OF ANY GROUNDWATER THAT MAY BE OVER THE PIPE) SHALL NOT BE LESS THAN THE TIME SHOWN FOR THE GIVEN DIAMETERS IN THE FOLLOWING TABLE.

SPECIFICATION TIME REQUIRED FOR A 1.0 PSIG PRESSURE DROP*  
FOR SIZE AND LENGTH OF PIPE INDICATED

PIPE DIA. (IN.)	MIN. TIME (MIN:SEC)	LENGTH FOR MIN. TIME (FT.)	TIME FOR LONGER LENGTH (SEC.)
4	3:46	597	.380 L
6	5:40	398	.854 L
8	7:34	298	1.520 L
10	9:26	239	2.374 L
12	11:20	199	3.474 L
15	14:10	159	5.342 L
18	17:00	133	7.692 L
21	19:50	114	10.470 L
24	22:40	99	13.674 L
27	25:30	88	17.306 L
30	28:20	80	21.366 L
33	31:10	72	25.852 L
36	34:00	66	30.768 L

* TIMES SHOULD BE HALVED FOR A 0.5 PSIG PRESSURE DROP.

- IN AREAS WHERE THE GROUNDWATER IS KNOWN TO EXIST, THE CONTRACTOR SHALL INSTALL A ONE-HALF INCH DIAMETER CAPPED PIPE NIPPLE, APPROX. 10" LONG THROUGH THE MANHOLE WALL ON TOP OF ONE OF THE SEWER LINES ENTERING THE MANHOLE. THIS SHALL BE DONE AT THE TIME THE SEWER LINE IS INSTALLED. IMMEDIATELY PRIOR TO THE PERFORMANCE OF THE LINE ACCEPTANCE TEST, THE GROUNDWATER SHALL BE DETERMINED BY REMOVING THE PIPE CAP, BLOWING AIR THROUGH THE PIPE NIPPLE INTO THE GROUND SO AS TO CLEAR IT, AND THEN CONNECTING A CLEAR PLASTIC TUBE TO THE NIPPLE. THE HOSE SHALL BE HELD VERTICALLY AND A MEASUREMENT OF THE HEIGHT IN FEET SHALL BE DIVIDED BY 2.3 TO ESTABLISH THE POUNDS OF PRESSURE THAT WILL BE ADDED TO ALL READINGS. FOR EXAMPLE: IF THE HEIGHT OF WATER IS 11-1/2 FEET, THEN THE ADDED PRESSURE WILL BE 5 PSIG, AND THE 2.5 PSIG TEST PRESSURE WILL BE 7.5 PSIG. THE ALLOWABLE DROP OF ONE POUND AND THE TIMING REMAIN THE SAME.
- IF THE INSTALLATION FAILS THE AIR TEST, THE CONTRACTOR SHALL AT HIS EXPENSE, DETERMINE THE SOURCE OF LEAKAGE. HE SHALL THEN REPAIR OR REPLACE ALL DEFECTIVE MATERIALS AND/OR WORKMANSHIP. THE LINE SHALL THEN BE RETESTED.

VACUUM TEST PROCEDURES:  
(PER TOWN OF GRAFTON WASTEWATER TREATMENT FACILITY)

- THE TEST SHALL BE MADE USING AN INFLATABLE COMPRESSION BAND, VACUUM PUMP, AND APPURTENANCES SPECIFICALLY DESIGNED FOR TESTING MANHOLES. TEST PROCEDURES SHALL BE IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR SHALL BE FULLY FAMILIAR WITH VACUUM TESTING EQUIPMENT AND SHALL PROVIDE A MINIMUM OF 4 HOURS OF INSTRUCTION BY A FACTORY AUTHORIZED REPRESENTATIVE AT THE OUTSET OF THE PROJECT.
- EACH MANHOLE SHALL BE TESTED IMMEDIATELY AFTER ASSEMBLY INCLUDING THE CONNECTION OF PIPES AND PRIOR TO BACKFILLING.
- ALL LIFT HOLES SHALL BE PLUGGED WITH NONSHRINK GROUT AND ALL PIPES ENTERING THE MANHOLE SHALL BE PLUGGED AND BRACED TO PREVENT THE PLUG FROM BEING DRAWN INTO THE MANHOLE.
- AFTER THE TEST EQUIPMENT IS IN PLACE THE TEST SHALL BE RUN AT THE FOLLOWING RATE AND TEST TIMES:
  - FOR 4.0 FT. AND 5.0 FT. DIAMETER MANHOLES.
    - INITIAL PRESSURE TEST - 10-IN Hg.
    - TEST TIME - 1-IN Hg DROP TO 9-IN Hg IN 1 MINUTE MINIMUM ALLOWABLE, FOR 0-10 FT DEEP MANHOLES, 1 MINUTE 15 SECONDS MINIMUM ALLOWABLE FOR 10-15 FT DEEP MANHOLES; 1 MINUTE 30 SECONDS MINIMUM ALLOWABLE FOR 15-25 FT DEEP MANHOLES.
  - IF THE PRESSURE DROP EXCEEDS 1-IN Hg IN THE SPECIFIED TIME THE MANHOLE SHALL BE REPAIRED IN ACCORDANCE WITH APPROVED PROCEDURES AND RETESTED.
  - IF A MANHOLE FAILS TO MEET A 1-IN Hg DROP IN THE SPECIFIED TIME AFTER REPAIRS THE UNIT SHALL BE WATER EXFILTRATION TESTED AND REPAIRED AS NECESSARY.

NOTES:

- THIS PLAN IS PREPARED IN ACCORDANCE WITH A MAJOR RESIDENTIAL SPECIAL PERMIT GRANTED BY THE GRAFTON PLANNING BOARD ON 1/25/11, AND RECORDED IN THE WORCESTER DISTRICT REGISTRY OF DEEDS IN BOOK 47336, PAGE 90.
- SUBJECT TO COVENANT DATED , AND RECORDED AT WORCESTER DISTRICT REGISTRY OF DEEDS IN BOOK , PAGE , INSTRUMENT # .
- SEE DEFINITIVE SUBDIVISION SHEET OF FOR PLANNING BOARD CONDITIONS OF APPROVAL.

CERTIFICATE OF NO APPEAL

DECISION OF THE GRAFTON PLANNING BOARD APPROVING THIS PLAN RECORDED IN THE OFFICE OF THE TOWN CLERK

NO NOTICE OF APPEAL THEREFROM WAS RECEIVED BY THE TOWN CLERK DURING THE 20 DAYS FOLLOWING.

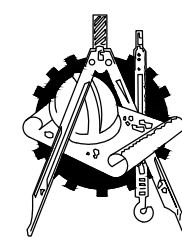
TOWN CLERK _____ DATE _____

DEEDS OF EASEMENTS TO BE RECORDED HEREWITH.

**G R A F T O N**  
**PLANNING BOARD**

APPROVAL UNDER THE SUBDIVISION  
CONTROL LAW IS REQUIRED

DATE: _____  
BEING A MAJORITY OF THE BOARD



**hs&t group, inc.**  
PROFESSIONAL CIVIL ENGINEERS & LAND SURVEYORS  
75 HAMMOND STREET - 2ND FLOOR  
WORCESTER, MASSACHUSETTS 01610-1723  
PHONE: 508-757-4944 EMAIL: INFO@HSTGROUP.NET  
FAX: 508-752-8895 WWW.HSTGROUP.NET

DEFINITIVE SUBDIVISION  
**ABBY WOODS**  
**18 CARROLL ROAD**

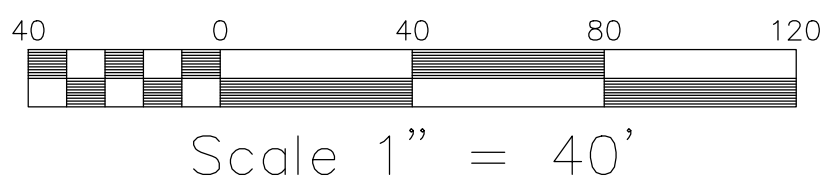
APPLICANT/OWNER: CENTRAL MASSACHUSETTS HOME BUILDERS LLC  
125 OLEAN STREET  
WORCESTER, MA 01602

FIELD:	DJT	DATE:	02/11/2020	FLD.BOOK:	307B
COMP'D:	DJT	SCALE:	AS SHOWN	FLD.PAGE:	48
CAD:	LLW	ZONE:	R-20	CARRWK2-DEF-REV.DWG	
CHECKED:	DJT, HH	JOB#:	2650	DWG#:	4391

SUPPLEMENTAL INFORMATION

SHEET

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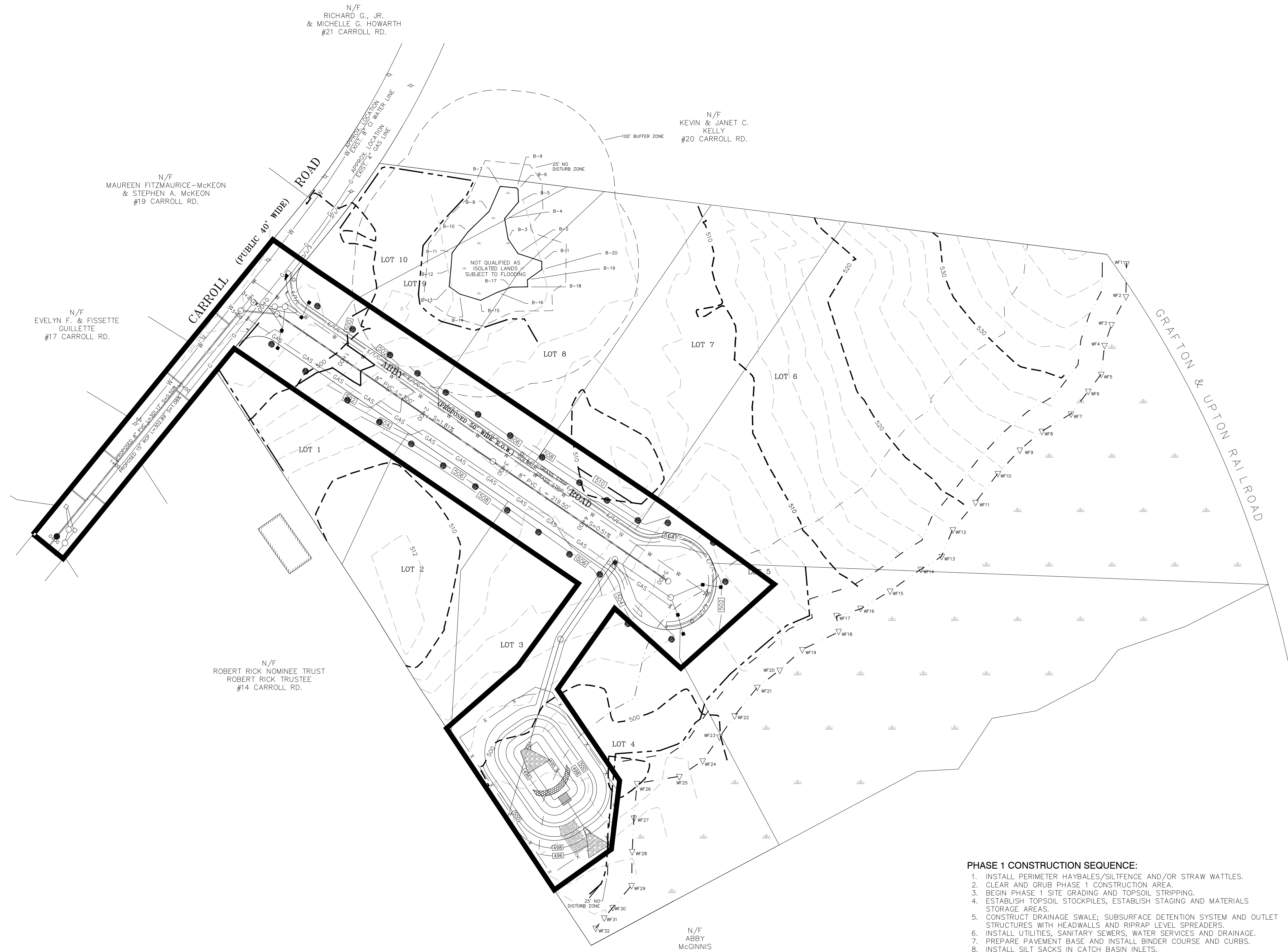








CONSTRUCTION PHASE 1



- PHASE 1 CONSTRUCTION SEQUENCE:
1. INSTALL PERIMETER HAYBALES/SILTFENCE AND/OR STRAW WATTLES.
  2. CLEAR AND GRUB PHASE 1 CONSTRUCTION AREA.
  3. BEGIN PHASE 1 SITE GRADING AND TOPSOIL STRIPPING.
  4. ESTABLISH TOPSOIL STOCKPILES, ESTABLISH STAGING AND MATERIALS STORAGE AREAS.
  5. CONSTRUCT DRAINAGE SWALE; SUBSURFACE DETENTION SYSTEM AND OUTLET STRUCTURES WITH HEADWALLS AND RIPRAP LEVEL SPREADERS.
  6. INSTALL UTILITIES, SANITARY SEWERS, WATER SERVICES AND DRAINAGE.
  7. PREPARE PAVEMENT BASE AND INSTALL BINDER COURSE AND CURBS.
  8. INSTALL SILT SACKS IN CATCH BASIN INLETS.
  9. PERMANENTLY STABILIZE AREAS THAT ARE COMPLETE PER DESIGN DRAWINGS.
  10. DISTURBED AREAS WHERE CONSTRUCTION WILL CEASE FOR MORE THAN 14 DAYS, WILL BE STABILIZED WITH EROSION CONTROLS.

- NOTES:
1. THIS PLAN IS PREPARED IN ACCORDANCE WITH A MAJOR RESIDENTIAL SPECIAL PERMIT GRANTED BY THE GRAFTON PLANNING BOARD ON 1/25/11, AND RECORDED IN THE WORCESTER DISTRICT REGISTRY OF DEEDS IN BOOK 47336, PAGE 90.
  2. SUBJECT TO COVENANT DATED , AND RECORDED AT WORCESTER DISTRICT REGISTRY OF DEEDS IN BOOK , PAGE . INSTRUMENT # .
  3. SEE DEFINITIVE SUBDIVISION SHEET OF FOR PLANNING BOARD CONDITIONS OF APPROVAL.

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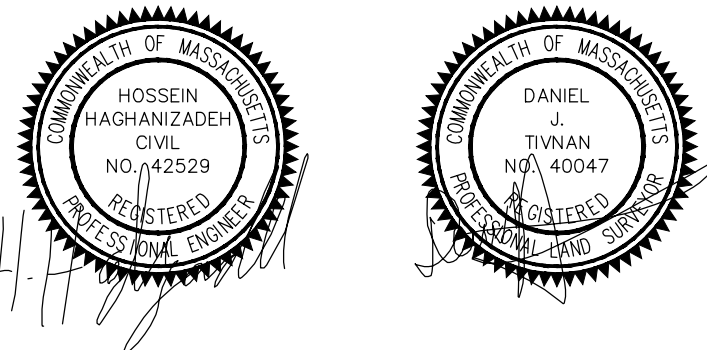
TOWN CLERK DATE

DEEDS OF EASEMENTS TO BE RECORDED HEREWITH.

GRAFTON  
PLANNING BOARD

APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED

DATE:  
BEING A MAJORITY OF THE BOARD



hs&t group, inc.  
PROFESSIONAL CIVIL ENGINEERS & LAND SURVEYORS  
75 HAMMOND STREET - 2ND FLOOR  
WORCESTER, MASSACHUSETTS 01610-1723  
PHONE: 508-757-4944 EMAIL: INFO@HSTGROUP.NET  
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DEFINITIVE SUBDIVISION  
ABBY WOODS  
18 CARROLL ROAD

APPLICANT/OWNER: CENTRAL MASSACHUSETTS HOME BUILDERS LLC  
125 OLEAN STREET  
WORCESTER, MA 01602

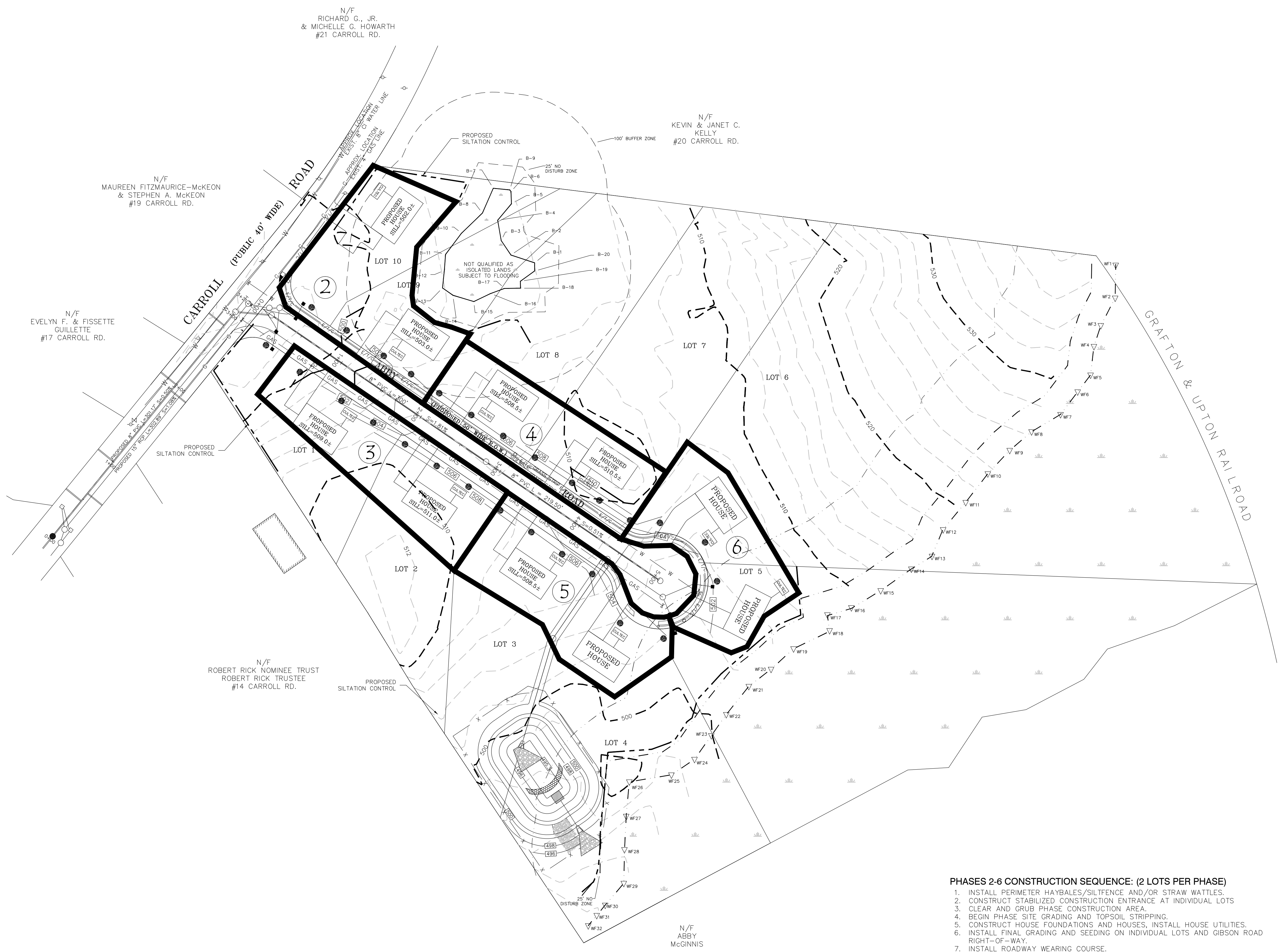
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CHECKED:	DJT, HH	JOB#:	2650	DWG#:	4391

PHASING

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CONSTRUCTION PHASES 2-6



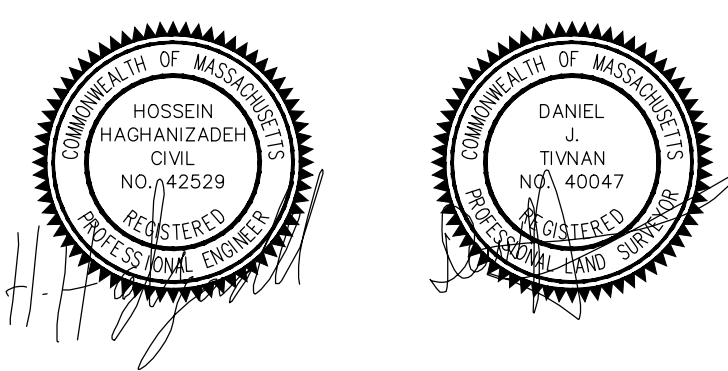
- NOTES:
1. THIS PLAN IS PREPARED IN ACCORDANCE WITH A MAJOR RESIDENTIAL SPECIAL PERMIT GRANTED BY THE GRAFTON PLANNING BOARD ON 1/25/11, AND RECORDED IN THE WORCESTER DISTRICT REGISTRY OF DEEDS IN BOOK 47336, PAGE 90.
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**GRAFTON**  
**PLANNING BOARD**  
APPROVAL UNDER THE SUBDIVISION CONTROL LAW IS REQUIRED

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PHASING

SHEET

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- PHASES 2-6 CONSTRUCTION SEQUENCE: (2 LOTS PER PHASE)
1. INSTALL PERIMETER HAYBALES/SILTFENCE AND/OR STRAW WATTLES.
  2. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE AT INDIVIDUAL LOTS.
  3. CLEAR AND GRUB PHASE CONSTRUCTION AREA.
  4. BEGIN PHASE SITE GRADING AND TOPSOIL STRIPPING.
  5. CONSTRUCT HOUSE FOUNDATIONS AND HOUSES, INSTALL HOUSE UTILITIES.
  6. INSTALL FINAL GRADING AND SEEDING ON INDIVIDUAL LOTS AND GIBSON ROAD RIGHT-OF-WAY.
  7. INSTALL ROADWAY WEARING COURSE.
  8. DISTURBED AREAS WHERE CONSTRUCTION WILL CEASE FOR MORE THAN 14 DAYS SHALL BE STABILIZED WITH EROSION CONTROLS.
  9. REMOVE ALL EROSION CONTROL MEASURES AND STABILIZE ANY AREAS DISTURBED BY THEIR REMOVAL.
  10. LOTS MUST BE STABILIZED BEFORE MOVING ON TO A NEW PHASE.
  11. THE ORDER OF PHASING (2-6) CAN CHANGE BASED ON THE SALE OF INDIVIDUAL LOTS.